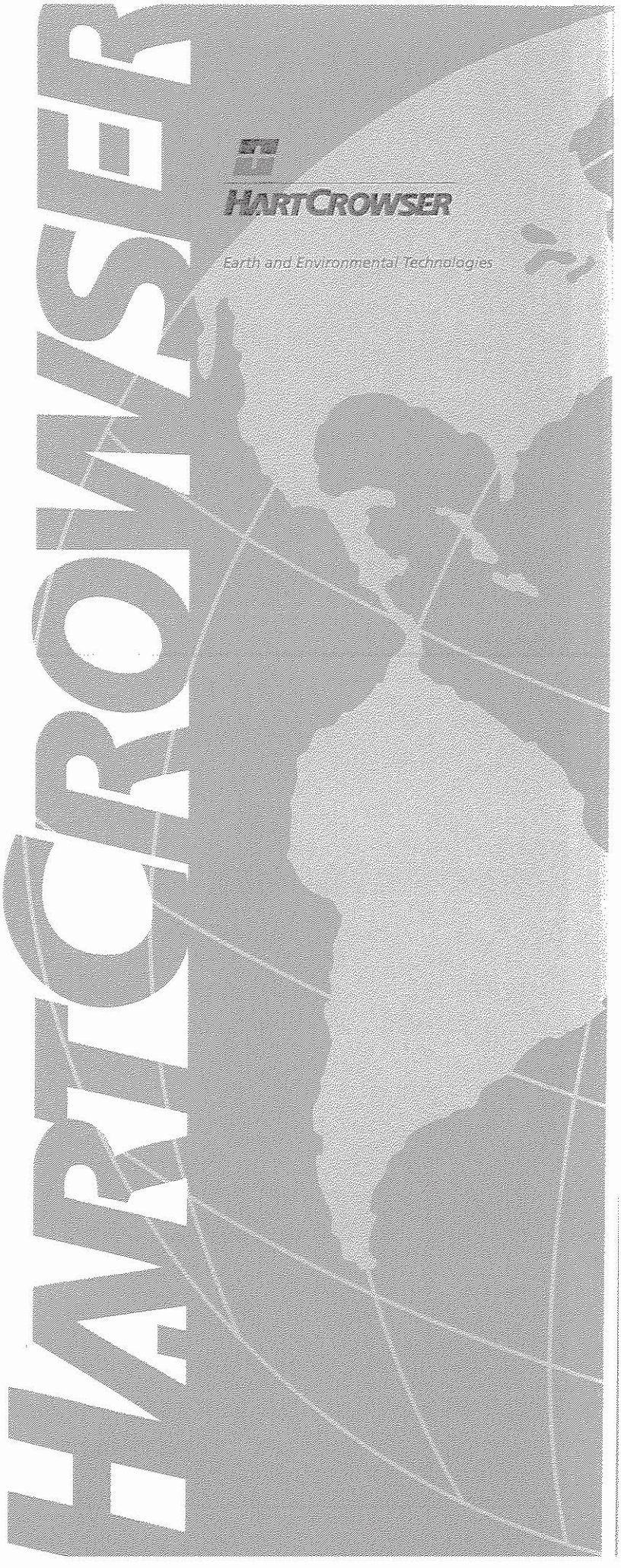

Soil Remediation Report
Former Chevron Bulk Terminal
No. 100-1840
SE Sixth and SE Union Avenues
Camas, Washington

Prepared for
Chevron U.S.A. Products Company

December 28, 1994
J-5407-01

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SOIL REMEDIATION REPORT
FORMER CHEVRON BULK TERMINAL No. 100-1840
SE SIXTH AVENUE AND SE UNION AVENUE
CAMAS, WASHINGTON

EXECUTIVE SUMMARY

From November 7 through 11, 1994, Hart Crowser accomplished soil remediation activities at former Chevron Bulk Terminal No. 100-1840 located in Camas, Washington. Our activities included oversight of the excavation activities, collection of soil samples for chemical analysis, and documentation of backfilling activities and the disposal of excavated soils. In addition, we oversaw the abandonment of four vapor monitoring wells on November 21, 1994. The following is a summary of our activities and findings.

Excavation. From November 7 through 9, 1994, about 700 cubic yards (cy) of soil with petroleum hydrocarbons was excavated from six separate areas at the site (maximum excavation depth of 16 feet). Another 130 cy was also removed from the upper 2 feet in the former aboveground storage tank (AST) area. When encountered, large boulders (>2 feet in diameter) were left at the bottoms of the excavations. Excavated soil was screened through a 3-inch shaker screen. About 200 cy of rocks greater than 3 inches in diameter were screened out and stockpiled for later use as backfill material.

Backfilling. Backfilling activities were accomplished from November 9 through 11, 1994. Imported sand was mixed with the screened rocks, placed in the excavations in approximately one-foot lifts, and compacted with a hoepack and/or a pad-foot compactor. After the screened rocks (and sand) had been returned to the excavations, pit run was placed and compacted, in like manner, to near grade. For the last foot, $^5/_8$-inch-minus crushed rock was placed in preparation for paving of the site.

Compaction. All backfill materials were compacted to a dense, nonyielding state. Compaction testing performed on the final grade of crushed rock indicated above 90 percent relative compaction of the maximum dry-density as determined by ASTM D1557. Due to the presence of large gravel and cobbles, compaction testing of the sand/rock mix and pit run could not be accomplished. However, one test was performed on the sand/rock mix which indicated a 91 percent relative compaction.

Landfill Disposition. Soils with petroleum hydrocarbons passing the 3-inch screen were loaded and transported to the Roosevelt Regional Landfill near Roosevelt, Washington, for final disposition. From November 8 through 10, 1994, a total of about 630 cy (790 tons) of soil was transported to the landfill.

Chemical Analyses on Soil Samples. Nine soil samples were collected from the bottoms of the excavations and analyzed for gasoline, diesel, and oil by Washington methodology. Chemical results detected petroleum hydrocarbons (>100 mg/kg) in soil samples from the bottoms of the excavations beneath the former loading rack and the former horizontal ASTs in the vicinity of monitoring well MW-1.

Soil samples were also analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). Benzene and toluene were not detected in any of the samples. Ethylbenzene and xylene concentrations were below the MTCA Method A Soil Cleanup Levels (20 mg/kg for each), except in sample ES-5 (obtained from the excavation in the former AST area) which had 47 mg/kg total xylenes.

Well Abandonments. Vapor monitoring wells MW-1 through MW-4 were abandoned by grouting with a bentonite/cement slurry on November 21, 1994.

1.0 INTRODUCTION

1.1 Purpose

This report summarizes our soil remediation activities accomplished from November 7 through 11, 1994, at former Chevron Bulk Terminal No. 100-1840 in Camas, Washington (Figure 1). Our purpose was to excavate soil with relatively high concentrations of petroleum hydrocarbons in order to decrease the risk posed by the site to human health or the environment. Our soil remediation work was conducted under Chevron release number 2214030, and the well abandonments under release number 1906170.

1.2 Scope

Our scope of work was completed in general accordance with our proposals dated November 3 and 4, 1994. Although our work only included full-time observation of excavation activities, we provided environmental oversight for all phases of the project. Our scope of work consisted of the following tasks:

- Prior to excavation, pump oil and water from a sump on the east side of the site and transport off the site for disposal.
- Excavate soil with petroleum hydrocarbons from six separate areas.
- Excavate the upper 2 feet of soil from the former AST area of the site.
- Screen all excavated soil to remove cobbles and boulders greater than 3 inches in diameter.
- Load soil into trucks for transportation to a landfill for disposal.
- Collect samples from the excavation bottoms for chemical analysis.
- Backfill the excavations to original grade with screened rocks and/or imported material, compacting all material to a dense, nonyielding state.
- Abandon vapor monitoring wells MW-1 through MW-4 by grouting.
- Prepare a report discussing our activities and the chemical results.

1.3 Limitations

Hart Crowser performed this work in accordance with generally accepted professional practices related to the nature of the work accomplished, in the same or similar localities, at the time the services were performed. This report is for the specific application to the referenced project and for the exclusive use of Chevron U.S.A. Products Company. No other warranty, expressed or implied, is made.

2.0 BACKGROUND

2.1 Site Description

The project site is a former bulk terminal located on the southeast corner of the intersection of SE Sixth Avenue and SE Union Avenue in Camas, Washington (Figure 1). The site was decommissioned in 1983, with the subsequent removal of the aboveground storage tanks (ASTs), pumps, and associated piping in 1984. An underground fuel oil tank was removed in 1990. All buildings have been removed except for the office building. Figure 2 shows current and historical features of the site.

2.2 Previous Site Assessment Findings

Site assessment work by previous consultants have included completing nine soil borings with the installation of monitoring wells into seven of those borings (i.e., MW-1 through MW-7). Wells MW-1 through MW-4 were completed to depths of about 22 feet below the ground surface (bgs) and wells MW-5 through MW-7 to about 44 feet bgs. Groundwater has only been observed in the deeper wells, at approximately 34 feet bgs.

Chemical analyses on soil from the borings indicated the presence of petroleum hydrocarbons in soil beneath the former loading rack, pumps, and horizontal ASTs to depths of up to 20 feet bgs. Chemical results on groundwater from MW-5 through MW-7 have only detected dissolved-phase petroleum hydrocarbons in groundwater from MW-5.

2.3 Test Pit Explorations

In September 1994, Hart Crowser accomplished eighteen test pits on the site property at the locations shown on Figure 2. Thirty-four soil samples obtained from the test pits were analyzed for petroleum hydrocarbons by Washington Ecology Method TPH-HCID with quantification, if detected, of gasoline by Method WTPH-G and of diesel and oil by Method WTPH-D Extended. Samples with gasoline were also analyzed for BTEX by EPA Method 8020.

Although gasoline was present in some soil samples, chemical results detected primarily diesel and oil. Maximum observed concentrations ranged up to 1,200

mg/kg gasoline, 13,000 mg/kg diesel, and 14,000 mg/kg oil. Benzene and toluene were not detected, and ethylbenzene and xylene concentrations were generally below the MTCA Method A Soil Cleanup Levels (20 mg/kg for each).

During our test pit activities, we discovered a sump containing oil and water on the east side of the site (near TP-9 on Figure 2). A sample of the sump contents was collected for chemical analyses required for disposal. Based on the results, the sump contents were approved for pickup and disposal by Spencer Environmental Services. For a detailed discussion of our activities and chemical results, please refer to our "Subsurface Soil Characterization Report," dated December 14, 1994.

2.4 Soil Conditions

Based on all subsurface explorations completed at the site, subsurface soils consist of 3 to 5 feet of light brown, slightly gravelly SILT overlying a light brown, gravelly SILT and sandy GRAVEL with cobbles and boulders (up to 4 feet in diameter) to a depth of at least 45 feet bgs. A very dense, silty GRAVEL is also present from about 18 to 22 feet bgs.

3.5 Data Analysis of Soil Samples

In order to assess areas for excavation, we reviewed the soil chemical results from the test pit explorations and previous soil borings for areas of relatively high concentrations of petroleum hydrocarbons (specifically diesel and oil).

The site was divided into subcells (laterally and vertically) with each subcell represented by one chemical result. For each subcell, the petroleum hydrocarbon mass was calculated based on the chemical result. The subcells were then ordered in decreasing petroleum hydrocarbon mass. After ordering, the cumulative percent of hydrocarbon mass and cumulative cubic yardage were calculated. These two parameters were plotted against each other to determine the most practicable soil volume to excavate.

Results of the data analysis determined that 85 percent of the mass of petroleum hydrocarbons in soil at the site could be removed by excavating about 700 cy of soil. In general, soil to be excavated had concentrations above 2,000 mg/kg diesel and oil. The cells representing the 85 percent of hydrocarbon mass were: 1) beneath a sand trap near the former garage; 2) near a sump on the east side of the site; 3) beneath the former horizontal ASTs in the vicinity of monitoring well MW-1; and 4) beneath the former loading rack.

3.0 SOIL REMEDIATION ACTIVITIES

From November 7 through 11, 1994, we accomplished soil remediation activities at the site. Our activities included overseeing of excavation, screening, and loading activities, collecting soil samples, and documenting backfilling and

disposal activities. In addition, we oversaw the abandonment of four vapor monitoring wells on November 21, 1994. Appendix A presents representative photographs of site activities.

3.1 Extent of Soil Excavation

Our data analysis identified four areas of soil with relatively higher petroleum hydrocarbons (see "Data Analysis of Soil Samples" section). Excavation was accomplished in these areas and two additional areas in the location of the former warehouse. The latter two areas were added because the current owner of the property wants to place a warehouse building in this location, therefore, making the area inaccessible in the future. The excavation areas are shown on Figure 3.

In order to limit access (by direct contact) to soils with petroleum hydrocarbons, the upper 2 feet of soil within the AST area was removed. The extent of the shallow excavation is also shown on Figure 3.

3.2 Methods

This section describes the field methods used for this project. Please refer to Appendix B for a more detailed discussion of these methods and quality assurance/quality control (QA/QC) procedures.

Documentation of Field Observations. We documented the soil remediation activities in our field notes and with photographs. Observations such as the progress of earthwork activities, field screening results, soil sample locations, and the nature of soils encountered were recorded. Although our work only included full-time observation of excavation and well abandonment activities, we would also document other activities, such as truck loading, if performed in conjunction with the excavation activities.

Soil Excavation, Screening, and Loading. Earthwork activities were accomplished by Terra Hydr, Inc., of Portland, Oregon, under subcontract to Hart Crowser. Soil was excavated using a trackhoe and transferred either directly or by a front loader to a 3-inch shaker screen (Photographs #1 and #2). When encountered, large boulders (those greater than 2 feet in diameter) were left in the bottoms of the excavations (Photograph #3).

Rocks greater than 3 inches in diameter were screened out and stockpiled for later use as backfill material. Material passing the screen was either stockpiled (pending loading) or directly loaded into bellydumps by the front loader (Photograph #4). Soil was then transported by the bellydumps to the Roosevelt Regional Landfill for final disposition.

Soil Sampling. We collected soil samples from the excavation bottoms by directing the trackhoe operator to remove soil from the sample location and then collecting the soil sample from the trackhoe bucket.

Field Screening of Soil Samples. We used a photoionization detector (PID) to screen for volatile organic compounds (VOCs). The PID is not compound or concentration specific, but only provides a qualitative indication of the presence of VOCs. Usually, we consider a PID reading of 50 or greater as an indication of the presence of petroleum hydrocarbons.

Backfilling and Compaction. After completing excavation activities, the excavations were backfilled with the screened rocks mixed with sand, then pit run, and finally crushed rock. Backfill material was placed in approximately one-foot lifts and compacted with a hoepack. When the excavation had been backfilled sufficiently to allow access, a vibratory, pad-foot compactor will be used for compaction.

3.3 Excavation Activities

From November 7 through 9, 1994, we observed the excavation of about 700 cy of soil with petroleum hydrocarbons was excavated from six separate areas at the site (Figure 3; Photograph #5). In addition, another 130 cy of soil was excavated from the upper 2 feet in the former AST area (Photograph #6).

Excavation Limits. The limits of the excavations were initially based on the subcell dimensions of our data analysis (Section 2.5 above). Based on field observations (i.e., visual and olfactory) during the excavation activities, we adjusted the actual extent of the excavations to remove soil with field evidence of relatively higher concentrations of petroleum hydrocarbons. The depths of the excavations ranged from 3 to 16 feet bgs, the maximum depth attainable by the trackhoe. Figure 3 shows the final extent of the excavation areas and their depths.

Removal of Sump Contents. On November 8, 1994, a vac-truck from Spencer Environmental Services pumped the oil and water from the sump prior to excavation in this area. The sump contents were then transported off the site and disposed of by Spencer Environmental Services. Appendix D includes a copy of the receipt for removal of the sump contents for disposal.

Soil Conditions. Soils encountered in the excavations consisted of about 3 to 5 feet of light brown, gravelly SILT overlying light brown, very gravelly SILT with cobbles and boulders up to 5 feet in diameter (Photographs #3 and #5).

Soils with Field Evidence of Petroleum Hydrocarbons. Based on PID readings and field observations, soils with field evidence of petroleum hydrocarbons were present in the former AST, sand trap, and loading rack excavations (refer to Figure 3). These soils were excavated to the extent practicable as defined by initial subcell dimensions and the maximum depth attainable by the trackhoe. Soils with field evidence of petroleum hydrocarbons remain in the bottom of the former AST excavation and around and southeast of vapor monitoring well MW-1 (Photograph #3).

Screening. Excavated soil was screened through a 3-inch shaker screen (Photographs #1 and #2), with material passing the screen being transported to

the Roosevelt Regional Landfill for disposal (see Section 3.6 below). About 200 cy of rocks greater than 3 inches in diameter were screened out and stockpiled for use as backfill material (Photograph #7).

3.4 Soil Samples

After completion of an excavation, we collected a soil sample(s) from the bottom of the excavation (see Appendix A for sampling methods). Samples were collected on November 7 and 8, 1994. Table 1 provides information on sample location, date, and depth, and Figure 4 shows the sample locations.

Samples ES-1 and ES-2 were obtained at about 6 and 4 feet bgs, respectively, from the warehouse excavations. Samples ES-3, ES-4, ES-5, and ES-7 were all obtained from 15 to 16 feet bgs from the former AST excavation. We collected samples ES-6 and ES-8 from about 11 feet bgs in the loading rack and sand trap excavations, respectively. Finally, sample ES-9 was obtained from about 5.5 feet bgs in the sump excavation.

3.5 Backfill and Compaction Activities

From November 9 through 11, 1994, backfilling activities were accomplished at the site. As backfill material was placed, it was compacted to a dense, nonyielding state. Geotechnical testing was performed by Carlson Testing, Inc., of Tigard, Oregon, under subcontract to Terra Hydr, Inc.

Backfilling. During excavation, large boulders greater than 2 feet in diameter were left on the bottoms of the excavations (Photograph #3). Imported sand was mixed with the boulders and compacted using a hoepack. Screened rocks were placed in the excavation with imported sand (Photographs #8 and #9), spread as an approximately one-foot lift, and compacted with a hoepack and/or vibratory, pad-foot compactor.

After the screened rocks (with imported sand) had been returned to the excavations, backfill consisted of pit run. This coarse-grained material was use to facilitate compaction during heavy rains. As before, pit run was spread in approximately 1-foot lifts and then compacted (Photograph #10). Pit run was used to backfill all excavations to near grade. In preparation for paving of the site, about 6 to 12 inches of $^{5}/_{8}$-inch-minus crushed rock was placed on all the excavated areas (Photograph #11).

Compaction Testing. Geotechnical testing was accomplished on backfill material in accordance with ASTM D1557. Compaction testing was performed in the field, when possible, using a nuclear densometer. Test results are presented in Table 2, and a copy of the testing report is included in Appendix C.

Due to the presence of large gravels and cobbles in the sand/rock mix, only one test could be performed. The one test, however, indicated a 91 percent

compaction relative to the maximum dry-density. Also, compaction testing could not be performed on the pit run material because 66 percent of the material was greater than $^3/_4$-inch.

The final grade of crushed rock was tested with all results being above the 90 percent relative compaction requirement as determined by ASTM D1557.

3.6 Transportation and Disposal

Soils with petroleum hydrocarbons passing the 3-inch screen were loaded into bellydumps and transported to the Roosevelt Regional Landfill near Roosevelt, Washington, for final disposition. The landfill is operated by Rabanco Regional Landfill Company. From November 8 through 10, 1994, a total of about 630 cy (790 tons) of soil was transported to the landfill. Appendix D presents copies of the transportation manifests for disposal of the soil under Permit No. 94-2049.

3.7 Well Abandonments

On November 21, 1994, Geo-Tech Explorations, Inc., of Tualatin, Oregon, abandoned vapor monitoring wells MW-1 through MW-4 in accordance with State of Washington regulations (Photograph #11). The wells were grouted with a bentonite/cement slurry, and the monuments were removed. Figure 5 shows the current layout of the site.

4.0 CHEMICAL ANALYSES AND RESULTS

All sample analyses were performed by Analytical Technologies, Inc. (ATI), in Durham, Oregon, on a standard turnaround time. A copy of the laboratory report is included in Appendix E.

4.1 Analyses Requested

The nine soil samples collected from the bottoms of the excavations were analyzed for gasoline by Washington Method WTPH-G, diesel and oil by Washington Method WTPH-D Extended, and BTEX by EPA Method 8020.

4.2 Chemical Results

Fuel Types. Table 1 summarizes the chemical results for petroleum hydrocarbons analyses as well as sample depths, locations, and PID readings. Chemical results are also shown on Figure 4. Chemical results detected petroleum hydrocarbons above MTCA Method A Soil Cleanup Levels (100 mg/kg gasoline, 200 mg/kg diesel, and 200 mg/kg oil, respectively) in soil samples from the bottoms of the excavations beneath the former loading rack excavation and the former ASTs excavation.

BTEX. BTEX analyses results are also presented in Table 1. Benzene and toluene were not detected in any of the samples (detection limits ranged from 0.029 to 0.035 mg/kg). Ethylbenzene and xylene concentrations were below the MTCA Method A Soil Cleanup Levels (20 mg/kg for each), except for in sample ES-5 (obtained from the Former AST Excavation) which had 47 mg/kg total xylenes.

5.0 CONCLUSIONS

From November 7 through 11, 1994, Hart Crowser accomplished soil remediation activities at former Chevron Bulk Terminal No. 100-1840. A total of about 830 cy of soil with petroleum hydrocarbons was excavated from six separate excavations and from the upper 2 feet of the former AST area. The excavated soil was screened to remove rocks greater than 3 inches in diameter (the rocks were later used as backfill material on the site). About 630 cy of material passing the screen was then transported to the Roosevelt Regional Landfill for final disposition.

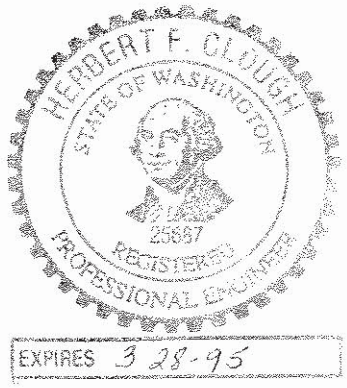
Chemical results on verification soil samples obtained from the bottoms of the excavations did not detect petroleum hydrocarbons above MTCA Method A soil cleanup standards in the warehouse, sand trap, and sump excavations. However, soils with petroleum hydrocarbons above Method A cleanup levels remain below 10 feet bgs in the former loading rack area and below 15 feet bgs in the former AST area. Field observation also suggest that soil with petroleum hydrocarbons are present around and southeast of the location of former vapor monitoring well MW-1.

If you have any questions regarding this project, please feel free to call.

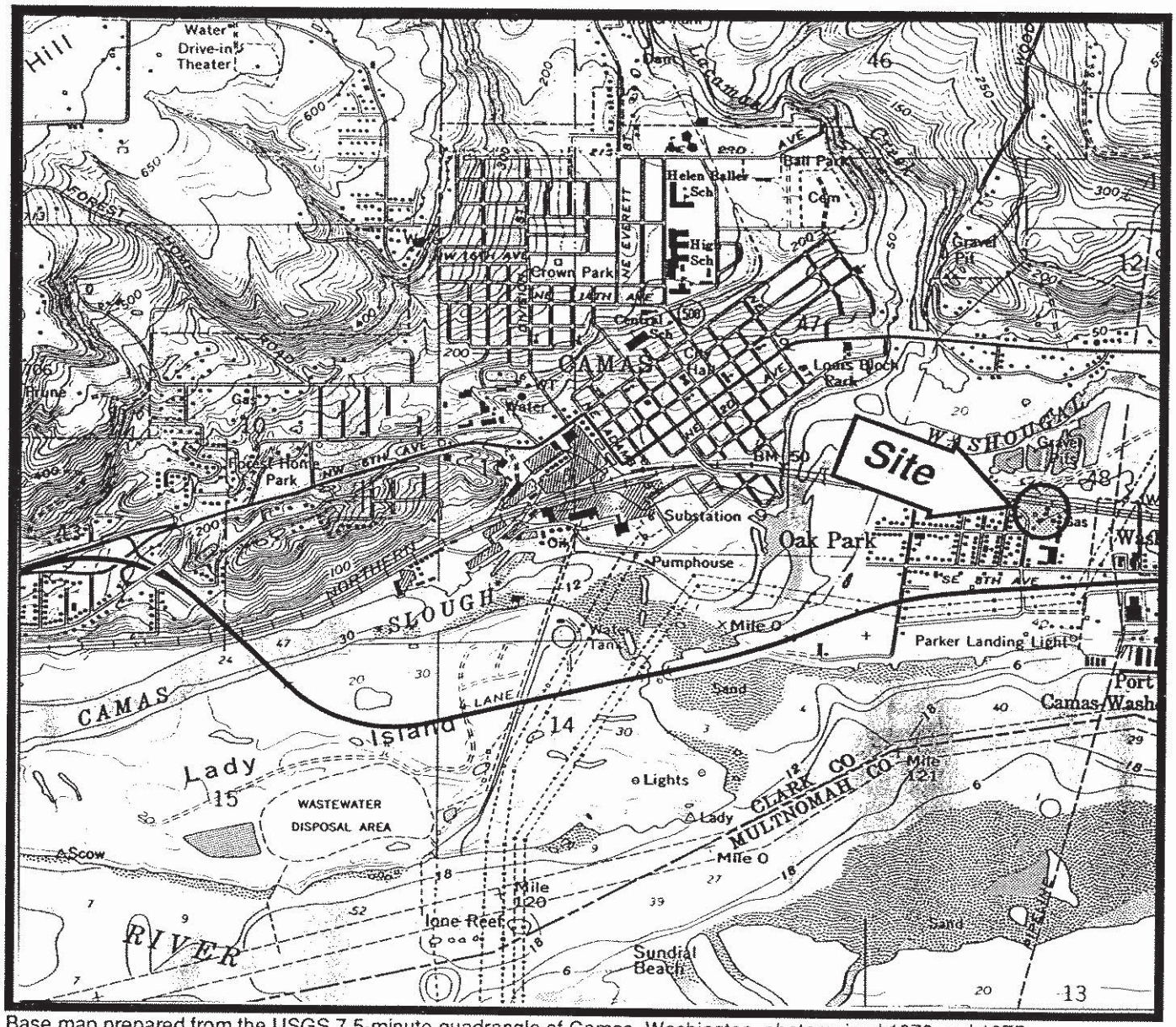
HART CROWSER, INC.

RICHARD D. ERNST, R.G.
Project Geologist

HERBERT F. CLOUGH, P.E.
Associate



Site Location Map
Former Chevron Bulk Terminal No. 100-1840
Camas, Washington



Base map prepared from the USGS 7.5-minute quadrangle of Camas, Washington, photorevised 1970 and 1975.

SCALE 1 : 24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

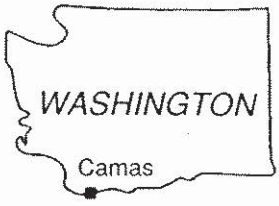


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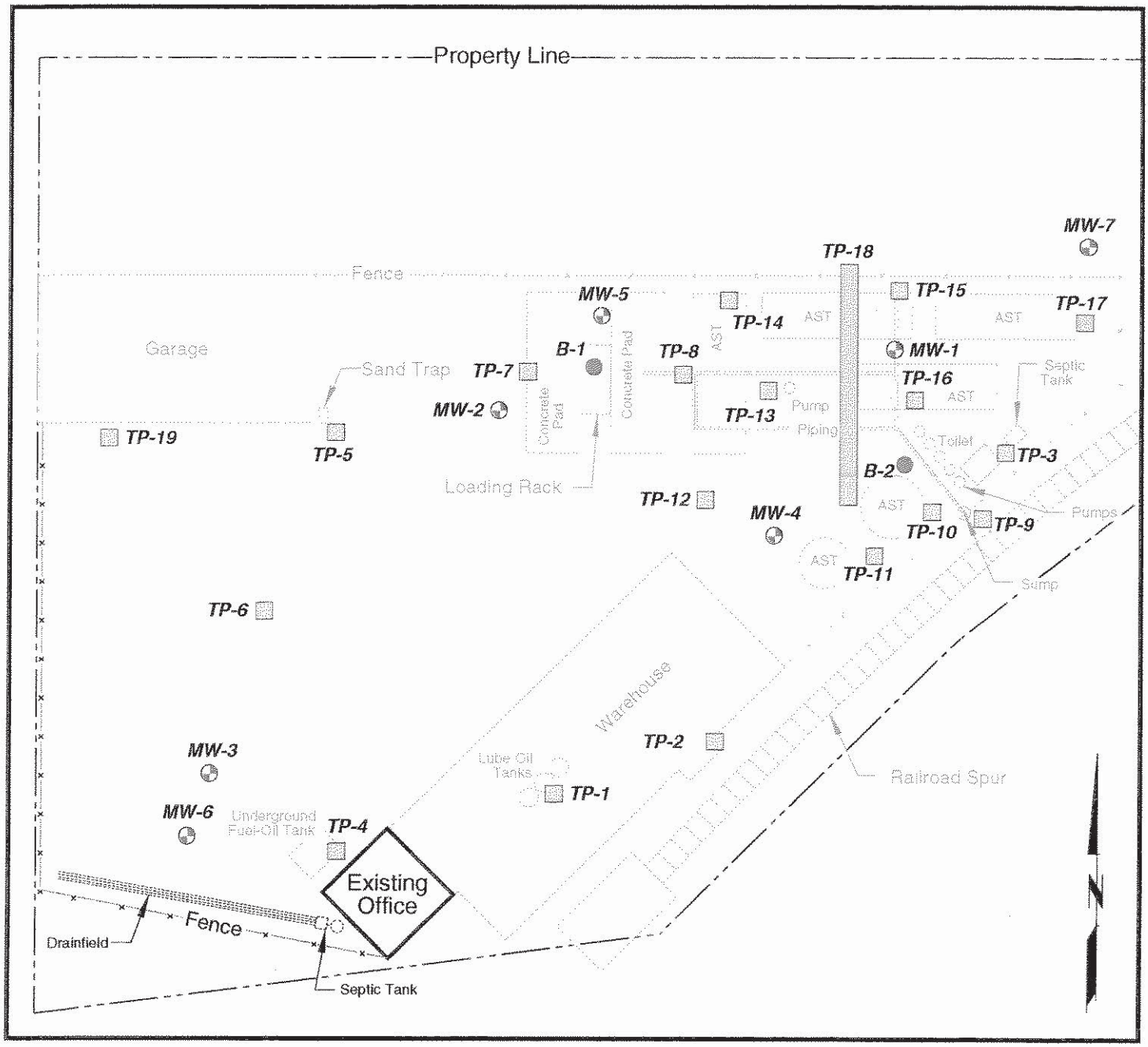
Figure 1

Site Exploration Plan
Former Chevron Bulk Terminal No. 100-1840
Camas, Washington



Note: Base map prepared from Standard Oil Company of California Ground Plan, dated 3/26/21.

Legend:

- *TP-1* Test Pit Location and Designation
- *MW-3* Monitoring Well Location and Designation
- *B-1* Boring Location and Designation
- Former Feature

0 30 60

Approximate Scale in Feet

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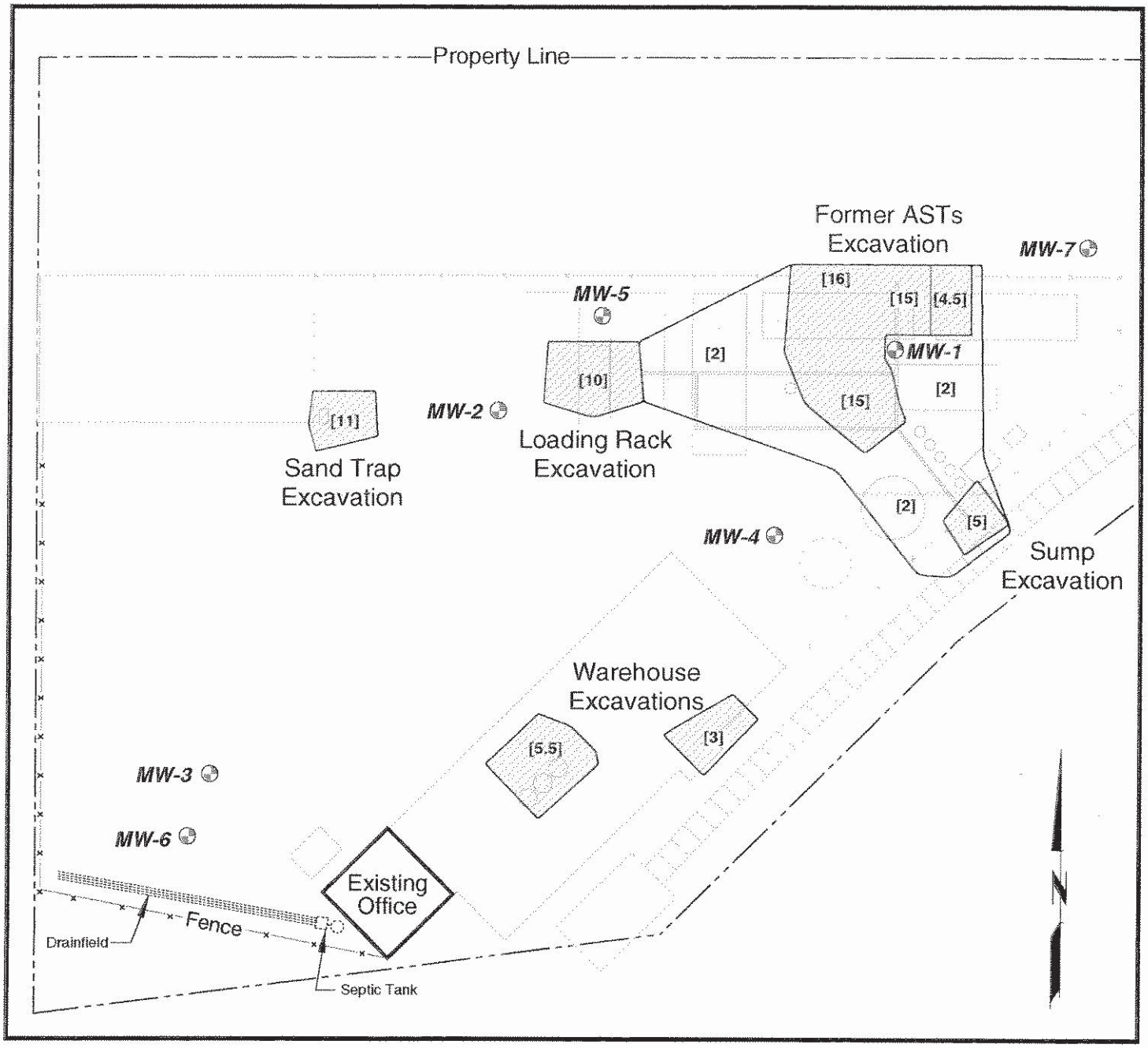
Figure 2

Excavation Areas
Former Chevron Bulk Terminal No. 100-1840
Camas, Washington



Note: Base map prepared from Standard Oil Company of California Ground Plan, dated 3/26/21.

Legend:

- ***MW-3*** Monitoring Well Location and Designation
- Former Feature
- Excavation Area (3 to 16 Feet Deep)
- Shallow Excavation Area (2 Feet Deep)
- [11] Excavation Depth in Feet

0 15 30 60

Approximate Scale in Feet

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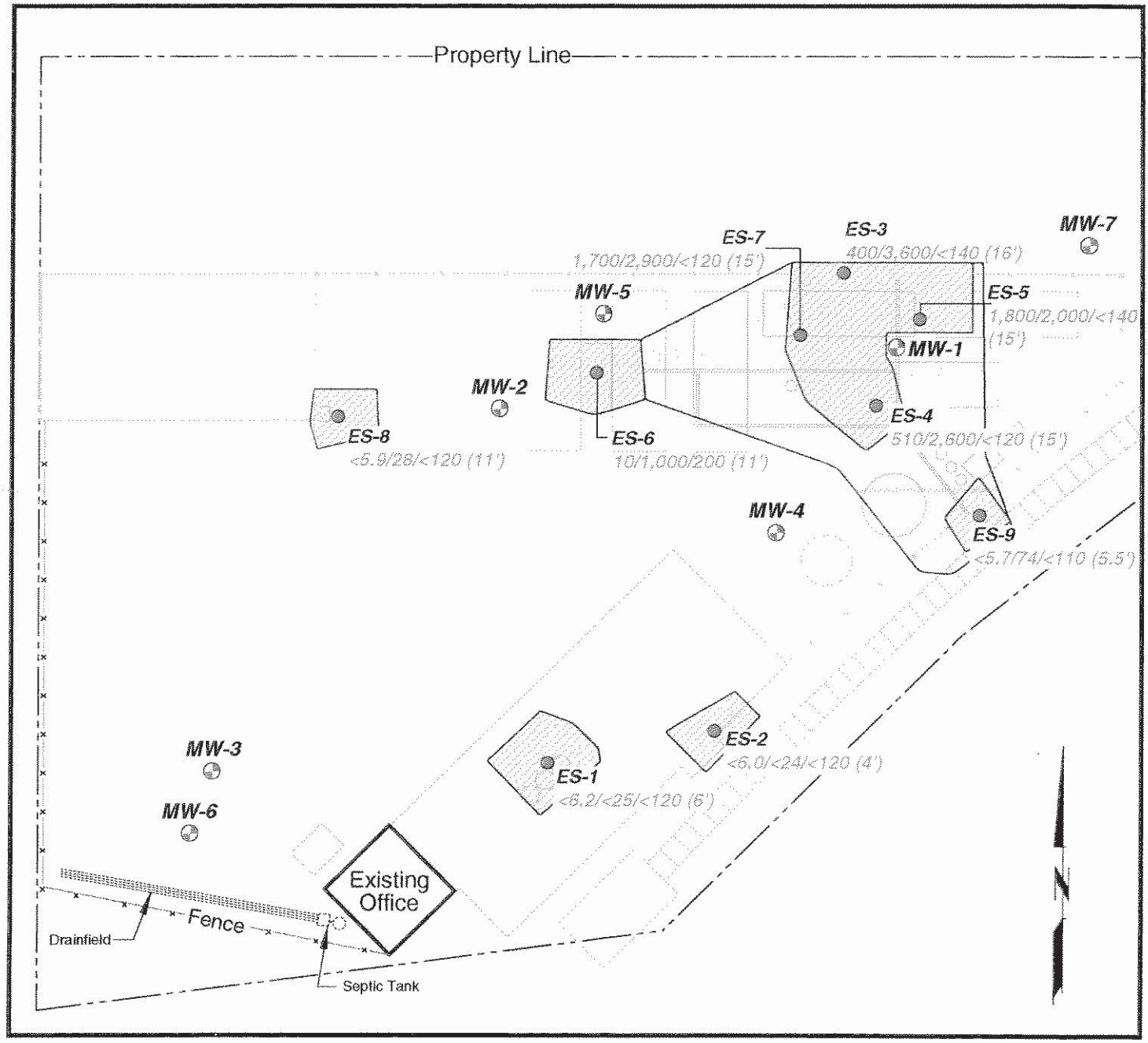
J-5407-01 *12/94*

Figure 3

Excavation Soil Sample Results
Former Chevron Bulk Terminal No. 100-1840
Camas, Washington



Note: Base map prepared from Standard Oil Company of California Ground Plan, dated 3/26/21.

Legend:

ES-3 ●	Soil Sample Location and Designation
400/3,600/<140 (16')	Gasoline/Diesel/Oil Concentration in Soil in mg/kg and (Sample Depth in Feet)
MW-3 ◔	Monitoring Well Location and Designation
	Former Feature
	Excavation Area (3 to 16 Feet Deep)
	Shallow Excavation Area (2 Feet Deep)

0 15 30 60

Approximate Scale in Feet

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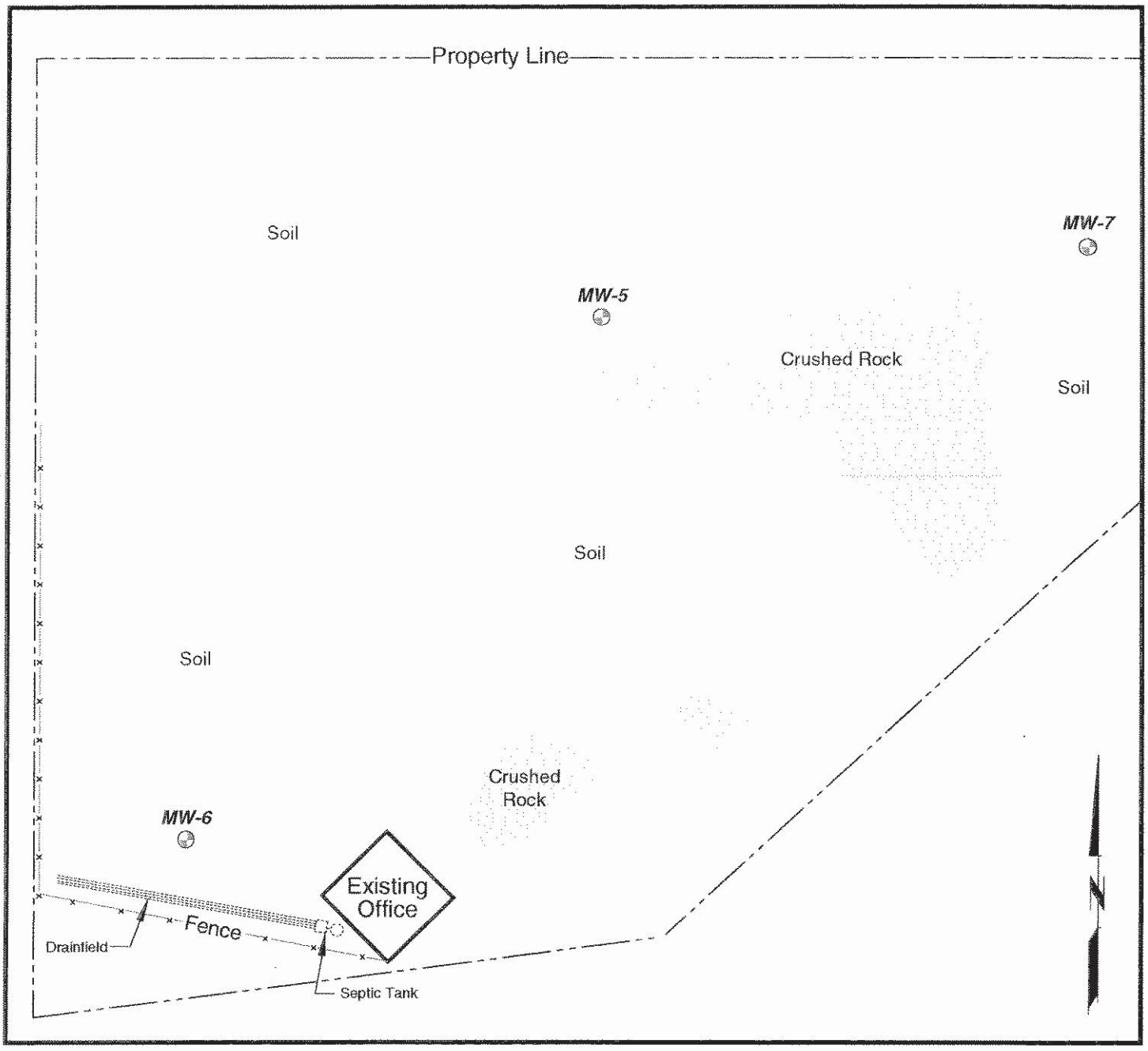
Figure 4

Current Site Plan
Former Chevron Bulk Terminal No. 100-1840
Camas, Washington



Note: Base map prepared from Standard Oil Company of California Ground Plan, dated 3/26/21.

0 30 60

Approximate Scale in Feet

Legend:

MW-5 ◎ Monitoring Well Location and Designation

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Figure 5

Table 1 - Soil Chemical Analyses Results: Excavation Samples
Former Chevron Bulk Terminal No. 100-1840
Camas, Washington

Sample	Excavation	Date	Depth in Feet	PID Reading	Washington Ecology Method WTPH-G Gasoline	WTPH-D Ext. Diesel	WTPH-D Ext. Oil	EPA Method 8020 Benzene	Toluene	Ethyl-benzene	Total Xylenes
					Concentration in mg/kg (ppm)						
ES-1	Warehouse (Oil Tanks)	7-Oct-92	6	<5	<6.2	<25	<120	<0.031	<0.031	<0.031	<0.031
ES-2	Warehouse (Loading Door)	7-Oct-92	4	<5	<6.0	<24	<120	<0.030	<0.030	<0.030	<0.030
ES-3	Former ASTs	7-Oct-92	16	60	400	3,600	<140	<0.034	<0.034	0.51	1.6
ES-4	Former ASTs	7-Oct-92	15	115	510	2,600	<120	<0.029	<0.029	1.8	8.3
ES-5	Former ASTs	8-Oct-94	15	17	1,800	2,000	<140	<0.035	<0.035	5.9	47
ES-6	Loading Rack	8-Oct-94	11	<5	10	1,000	200	<0.030	<0.030	<0.030	0.035
ES-7	Former ASTs	8-Oct-94	15	120	1,700	2,900	<120	<0.030	<0.030	1.9	7.9
ES-8	Sand Trap	8-Oct-94	11	<1	<5.9	28	<120	<0.029	<0.029	<0.029	<0.029
ES-9	Sump	8-Oct-94	5.5	<5	<5.7	74	<110	<0.029	<0.029	<0.029	<0.029
	MTCA Method A Soil Cleanup Level*:				100	200	200	0.5	40	20	20

Notes:

1. Also see Figure 3 for excavation locations.
2. -- = Not applicable or not analyzed.
3. Results corrected for moisture content.
4. *MTCA Method A Soil Cleanup Levels from WAC 173-340 Table 2.

Table 2 - Compaction Test Results
Former Chevron Bulk Terminal No. 100-1840
Camas, Washington

Backfill Material	Excavation	Date	Depth in Feet	Percent Compaction*
Sand/Rock Mix†	Loading Rack	9-Nov-94	1	91
Pit Run¥	--	--	--	--
Crushed Rock	Sand Trap	11-Nov-94	Grade	96
	Warehouse (Oil Tanks)	11-Nov-94	Grade	91
	Warehouse (Loading Door)	11-Nov-94	Grade	90
	Former ASTs	11-Nov-94	Grade	91
	Former ASTs	11-Nov-94	Grade	91
	Former ASTs	11-Nov-94	Grade	92
	Loading Rack	11-Nov-94	Grade	91

Notes:

1. Please see Appendix C for the Density Testing Report.
2. *Percent compaction of the maximum dry density as determined by ASTM D1557.
3. †Due to the presence of large gravels and cobbles in the sand/rock mix, only one test was performed.
4. ¥Density testing was not performed on the pit run because it contained more than 30% of material greater than three-quarters of an inch. Therefore, it was untestable by ASTM D1557.

APPENDIX A
PHOTOGRAPHS

Photograph #1: Excavation of former loading rack area and screening. Loading in background. Photograph taken looking east.

Photograph #2: Screening excavated soil. Photograph taken looking west.

Photograph #3: Former ASTs excavation. Note boulders at bottom. Photograph taken looking south (MW-1 marked by cone).

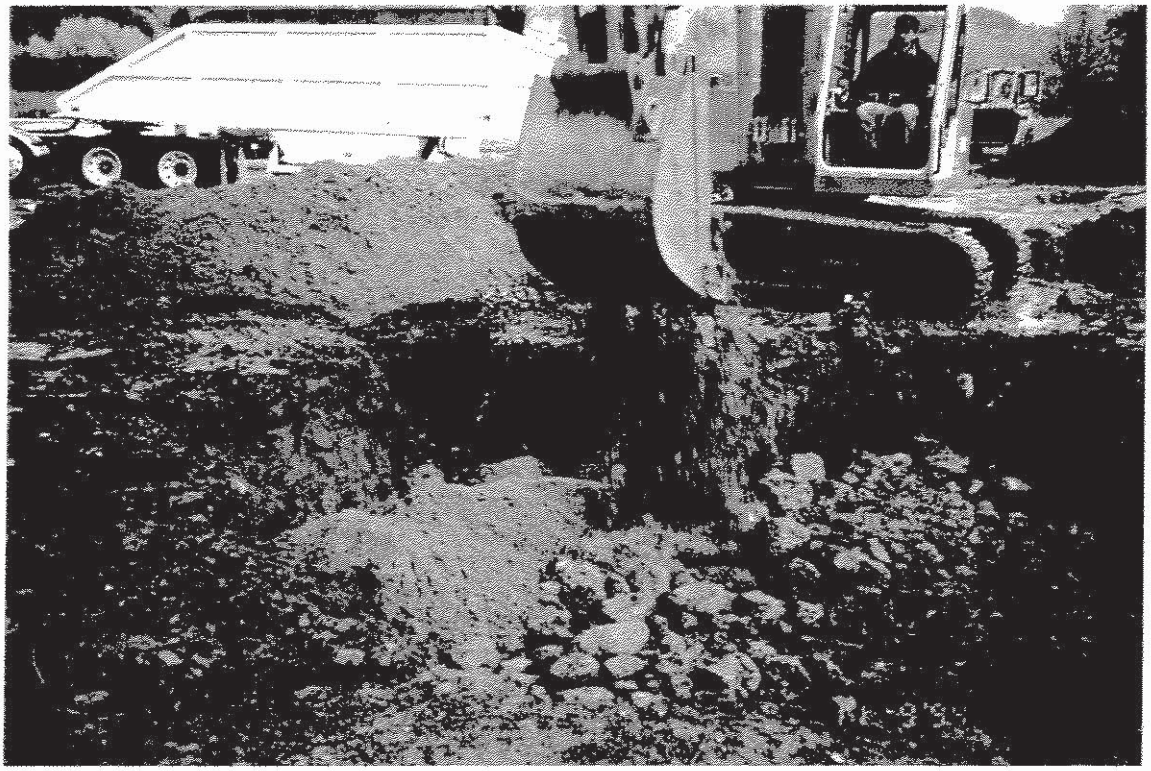
Photograph #4: Loading screened soil into belly dump from stockpile at right. Photograph taken looking northwest.

Photograph #5: Warehouse excavation nearest existing office building. Note silt in sidewalls. Boulders were encountered at bottom of excavation. Photograph taken looking west.

Photograph #6: Shallow excavation. Cones mark MW-5 (foreground) and MW-1 (background). Photograph taken looking southeast.

Photograph #7: Stockpile of screened rock (in center) after one day of screening. Compactor used for compacting backfill in background. Photograph taken looking west.

Photograph #8: Placing screened rocks into former ASTs excavation. Imported sand to be mixed in with rocks is to left. Hoepack at right. Photograph taken looking east.



Photograph #9: Placing imported sand with screened rock in loading rack excavation. Sand and rock were mixed prior to compaction. Photograph taken looking north.

Photograph #10: Spreading pit run into shallow excavation. Photograph taken looking southwest.

Photograph #11: Abandoning MW-1 by grouting. Note crushed rock for grade. Photograph taken looking northwest.

APPENDIX B
FIELD AND QA/QC PROCEDURES

APPENDIX B
FIELD AND QA/QC PROCEDURES

This appendix presents the procedures Hart Crowser personnel used to complete the field and analytical work for this project. The procedures discussed below include:

- Documentation of field observations;
- Earthwork activities;
- Soil sample collection;
- Photoionization detector (PID) headspace measurements;
- Sump sampling; and
- Field quality assurance/quality control (QA/QC).

Documentation of Field Observations

We documented the soil remediation activities in our field notes and with photographs. Observations such as the progress of earthwork activities, field screening results, soil sample locations, and the nature of soils encountered were recorded. Although our work only included full-time observation of excavation and well abandonment activities, we also documented other activities, such as truck loading, if performed in conjunction with the excavation activities.

Earthwork Activities

From November 7 through 11, 1994, we accomplished soil remediation activities at the site. Earthwork activities were accomplished by Terra Hydr, Inc., of Portland, Oregon, under subcontract to Hart Crowser.

Excavating. A Hart Crowser representative was present to observe and document the excavation activities. Soil was excavated using a Hitachi EX150 trackhoe. When encountered, large boulders (those greater than 2 feet in diameter) were left in the bottoms of the excavations.

Screening. Excavated soil was transferred to a 3-inch shaker screen either directly by the trackhoe or by a front loader (Kawasaki 65ZIII). Screened rocks greater than 3-inches in diameter were stockpiled for later use as backfill material. If fines (i.e., silt) were adherring to the screened rocks, the rocks were screened a second time.

Loading. Material passing the screen was either stockpiled (pending loading) or directly loaded into bellydumps by the front loader. Bellydumps were provided by Sunrise Express, Inc., under subcontract to Rabanco Regional

Landfill Company (Rabanco). The disposal contract was direct between Chevron U.S.A. and Rabanco. Soil was then transported by the bellydumps to the Roosevelt Regional Landfill for final disposition.

Backfilling and Compaction. After completing excavation activities, the excavations were backfilled with the screened rocks mixed with sand (i.e., sand/rock mix), then pit run, and finally crushed rock. The sand/rock mix was created by placing a foot-thick layer of screened rocks in the excavation and adding sand, and then mixing with the trackhoe.

Backfill material was placed in approximately one-foot lifts and compacted with a hoepack (i.e., John Deere JD410 fitted with a plate compactor). When the excavation had been backfilled sufficiently to allow access, a vibratory, pad-foot compactor (Dynapac CA15) was used for compaction.

Soil Sample Collection

Sampling. We collected soil samples from the excavation bottoms by directing the trackhoe operator to remove soil from the sample location and then collecting the sample from the trackhoe bucket. A stainless steel spoon was used to transfer soil from the bucket into clean sample containers supplied by the analytical laboratory.

All containers were marked with a sample number, date of collection, project number, and sampler's initials. Samples were placed in a cooler with ice until transported to our office or the laboratory for refrigeration.

Decontamination. To reduce the chance for cross contamination between samples, all sampling equipment was cleaned before the completion of each sampling event. Cleaning consisted of washing in a detergent solution, rinsing with tap water, and rinsing with distilled water.

Field Screening. All soil samples were screened in the field for the presence of volatile organic compounds using a photoionization detector.

PID Headspace Measurements

Headspace vapor measurements were made on soil samples using an H-Nu® photoionization detector (PID) to assess the possible presence of volatile organic compounds (VOCs). The PID is not compound or concentration specific, but only provides a qualitative indication of the presence of VOCs.

Soil samples were placed in glass jars (filled less than half full), covered with aluminum foil prior to capping, and were warmed to about ambient temperature. PID measurements were made within 30 minutes of collection by pushing the 10.2 eV probe through the foil cover. Measurements were recorded on the field log. The PID was calibrated using a manufacturer-supplied standard gas.

Field Quality Assurance/Quality Control (QA/QC)

QA/QC was practiced throughout field activities. As discussed above, sampling equipment was decontaminated between each sampling event. All laboratory containers were marked with identifying information to prevent sample mix-up. Chain of custody was maintained and documented at all times.

APPENDIX C
DENSITY TESTING REPORT

APPENDIX C
DENSITY TESTING REPORT

This appendix presents the density testing report from Carlton Testing, Inc., of Tigard, Oregon, for work performed for and at the site. For both the sand/rock mix and the pit run, compaction tests could not be performed due to the presence of large gravels and/or cobbles.

Carlson Testing, Inc.

Construction Inspection & Related Tests
Geotechnical Consulting

P.O. Box 23814
Tigard, Oregon 97281
Phone (503) 684-3460
FAX # 684-0954

November 15, 1994
94-2514

Henry Stukey
TERRA HYDR, INC.
PO Box 3616
Portland, Oregon 97208

RE: ASTM 1557

Dear Henry:

This letter is in reference to a sample of aggregate received by our laboratory on November 9, 1994. The sample was scheduled for moisture/density tests (ie proctor). Due to the test procedures outlined in ASTM 1557, the sample doesn't meet criteria set forth in section 1.2 of the test method. This test method is only viable for materials which contain less than 30% retained on the 3/4" sieve. Preliminary grading of the sample yielded approximately 66% retained on the 34" sieve.

If you feel the received sample may not be representative and would like to resubmit another, please drop one by.

Our reports pertain to the material tested/inspected only. Information contained herein is not to be reproduced, except in full, without prior authorization from this office.

If there are any further questions regarding this matter, please do not hesitate to contact this office.

Respectfully submitted,

CARLSON TESTING, INC.

Douglas W. Leach
President

DWL:ak

Construction Inspection & Related Tes

Carlson Testing, Inc.

P.O. Box 23814
Tigard, Oregon 97281
Phone (503) 684-3460
FAX # 684-0954

JOB NO. 94-2514

Nov 11, 1994

REPORT OF IN-PLACE SOIL DENSITY TESTS

Client TERRA HYDR INC

Project CHEVRON BULK PLANT
SE 6TH & UNION CAMAS WA

Soil Description SAND FROM ZIMMERLY ROCK

Max. Dry Density 110.4 lbs./cu. ft. Optimum Moisture 16.6 % Method of Test ASTM 1557B

Serial # 20999 NUC 3440

DATE OF TEST	TEST NO.	TEST LOCATION	ELEV. FT.	LIFT NO.	FIELD MOISTURE %	IN-PLACE DENSITY (LBS./CU. FT.) WET	IN-PLACE DENSITY (LBS./CU. FT.) DRY	% COMPACTION
11-09	SF 1	HOLE #B-1	-1'		20.1	120.3	100.2	91

Remarks: cc:

90% COMPACTION REQUIRED

Tested by L. WARFIELD/MM

CARLSON TESTING INC

Construction Inspection & Related Tests

Carlson Testing, Inc.

P.O. Box 23814
Tigard, Oregon 97281
Phone (503) 684-3460
FAX # 684-0954

JOB NO. 94-2514

Nov 15, 1994

REPORT OF IN-PLACE SOIL DENSITY TESTS

Client TERRA HYDR INC

Project CHEVRON BULK PLANT SE 6TH & UNION CAMAS WA

Soil Description 5/8"-0 ROCK FROM GILBERT WESTERN

Max. Dry Density 139.6 lbs./cu. ft. Optimum Moisture 9.8 % Method of Test ASTM D1557

Serial # 21072 NUC 3440

DATE OF TEST	TEST NO.	TEST LOCATION	ELEV. FT.	LIFT NO.	FIELD MOISTURE %	IN-PLACE DENSITY (LBS./CU. FT.) WET	IN-PLACE DENSITY (LBS./CU. FT.) DRY	% COMPACTION
11-11	SF 2	TP-5	GRADE		6.9	143.5	134.2	96
11-11	SF 3	TP-1	GRADE		5.5	134.4	127.4	91
11-11	SF 4	TP-2	GRADE		5.9	133.5	126.1	90
11-11	SF 5	TP-18S	GRADE		6.7	135.5	127.0	91
11-11	SF 6	TP-18N	GRADE		5.6	133.6	126.5	91
11-11	SF 7	TP-15	GRADE		5.0	134.6	128.2	92
11-11	SF 8	B-1	GRADE		5.5	134.7	127.7	91

Remarks: cc:

90% COMPACTION REQUIRED

Tested by D. SUMINSKI/MM

CARLSON TESTING INC.

APPENDIX D
DISPOSAL DOCUMENTATION

APPENDIX D
DISPOSAL DOCUMENTATION

This appendix presents copies of the transportation manifests for disposal of the soil with petroleum hydrocarbons from the site at the Roosevelt Regional Landfill near Roosevelt, Washington. Rabanco Regional Landfill Company operates the landfill and provided the trucks necessary for transporting the soil. A copy of the reciept from Spencer Environmental Services for the removal of the sump contents (i.e., oil and water) is also included.

(503) 655-0896 **Spencer, Inc.** FAX: (503) 657-3395
PO BOX 5207
OREGON CITY, OREGON 97045-8207

ORDER # 2395

W O R K O R D E R

Nov 8 94
MORNING

BILL TO:
HART CROWSER
5 CENTERPOINTE DR
SUITE 240
LAKE OSWEGO, OR
97035

LOCATION:
OLD BULKING FACILITY
CORNER OF 6TH & UNION
CAMAS, WA

CUST #	PO #	ORDER DATE
260225	CN	Nov 3 94

DRIVER JUAN CARSON
TRUCK # 20

PUMP (1) OIL/WATER SEPARATOR AS DIRECTED BY CUSTOMER ON SITE.
DIRECTIONS: TAKE HWY 14 EAST TO FIRST STOP LIGHT AS YOU ENTER CAMAS/WASHOUGAL AREA. TAKE A LEFT AT STOP LIGHT. FOLLOW ROAD UNTIL IT MAKES A SHARP LEFT, THE BULKING FACILITY SHOULD BE ON YOUR RIGHT ON THE CORNER.

0001-00NT-0020-0SHR	TRK TRANSPORT #20 STAND. (INDU	2.0HR	2
308-SUM -BAY -0SUR	STEAM BAY SUMP-SMALL (INDUSTRI	1.0EA	1
0006-0NLQ-SE3 -0SUR	NON-HAZ LIQUID DISPOSAL (INDUS	1.0GAL	69
0006-0NSD-0001-0SUR	NON-HAZ SOLID/SLUDGE DISP. (IND	1.0GALLON	23

**SIGNATURE X Richard D. Carlson

SHIPPING PAPERS: MANIFEST LAND BAN HAZ BILL OF LADING SHORT FORM (BOL) LABELS

PERMIT (HILLSBORO/SES) PROVIDED BY: S/I CLIENT N/A

ORDERED BY: RICK ERNST 620-7284

A FINANCIAL CHARGE of 1½% per month may be applied to any Past Due amount. Past Due Accounts may be placed on C.O.D. without notification. If outside collection action is necessary purchaser shall pay all costs of collection including reasonable attorney fees.

PAY THIS AMOUNT →

REGIONAL DISPOSAL CO.
P.O. Box 338
HART CROWSER Roosevelt, WA 99356
(509) 374-5641

DEC 15 1994

Portland Office

TICKET NUMBER 142578 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 199 WStar-Red/gry-Snrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: BD17, SEAL #:

CUSTOMER TICKET #: 51291 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	90900 LBS	06:17	11/08/94
OUT:	37580 LBS	06:47	11/08/94

NET WEIGHT: 53320 LBS / 26.660 TONS

Gail Hutchens
Weighmaster - GAIL

E Bruce Nielsen
Driver

REGIONAL DISPOSAL CO.
P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142579 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 169 Pete-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: 51256 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	92340 LBS	06:19	11/08/94
OUT:	34300 LBS	06:48	11/08/94

NET WEIGHT: 58040 LBS / 29.020 TONS

Gail Hutchens

Al Stephens

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142714

*** COMPLETED WEIGHT TICKET ***

TRUCK ID: 182 Int'l-Red-Sunrise

ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #:

SEAL #:

CUSTOMER TICKET #:

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	89700 LBS	11:11	11/08/94
OUT:	34720 LBS	11:30	11/08/94

NET WEIGHT: 54980 LBS / 27.490 TONS

Gail Hutchins
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142715

*** COMPLETED WEIGHT TICKET ***

TRUCK ID: 171 Peteblt-Gold-Sunrise

ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: BD14,

SEAL #:

CUSTOMER TICKET #: 51252

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	79000 LBS	11:13	11/08/94
OUT:	33840 LBS	11:32	11/08/94

NET WEIGHT: 45160 LBS / 22.580 TONS

Gail Hutchins
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142719 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 00115 Intnatl-White-Sunris ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: BD11, SEAL #:

CUSTOMER TICKET #: 51253 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	88800 LBS	11:18	11/08/94
OUT:	35340 LBS	11:41	11/08/94

NET WEIGHT: 53460 LBS / 26.730 TONS

Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142720 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 155 Volvo-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: 62854 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	97960 LBS	11:20	11/08/94
OUT:	32100 LBS	11:39	11/08/94

NET WEIGHT: 65860 LBS / 32.930 TONS

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142732 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 199 WStar-Red/gry-Snrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: BD17, SEAL #:

CUSTOMER TICKET #: 51292 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	93580 LBS	12:46	11/08/94
OUT:	37160 LBS	13:11	11/08/94

NET WEIGHT: 56420 LBS / 28.210 TONS

Gail Hutchinson
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142733 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 169 Pete-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: 51257 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	82020 LBS	12:48	11/08/94
OUT:	33780 LBS	13:20	11/08/94

NET WEIGHT: 48240 LBS / 24.120 TONS

Gail Hutchinson

Al Stupi

REGIONAL DISPOSAL CO.
P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142734 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 190 Autocar/Blu/Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	94100 LBS	12:49	11/08/94
OUT:	34140 LBS	13:19	11/08/94

NET WEIGHT: 59960 LBS / 29.980 TONS

Gail Hutchins
Weighmaster - GAIL

Jack Santa
Driver

REGIONAL DISPOSAL CO.
P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142737 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 0133 Peteblt-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	81880 LBS	13:38	11/08/94
OUT:	33120 LBS	13:57	11/08/94

NET WEIGHT: 48760 LBS / 24.380 TONS

Harold T

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

ICKET NUMBER 142738 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 191 Int'l-Black-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
OB ID: 94-2049
ONTAINER #: SEAL #:

USTOMER TICKET #: CUSTOMER WEIGHT: Ø LBS
OMMENTS:

	WEIGHT	TIME	DATE	
IN:	79760 LBS	14:17	11/08/94	NET
UT:	32020 LBS	14:38	11/08/94	WEIGHT: 47740 LBS / 23.870 TONS

Weighmaster - JILL

M. Buttens
Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

ICKET NUMBER 142859 *** COMPLETED WEIGHT TICKET ***

RUCK ID: 169 Pete-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

OMMODITY: 34 PCS
OURCE: Camas, WA
JOB ID: 94-2049
ONTAINER #: SEAL #:

CUSTOMER TICKET #: 51258 CUSTOMER WEIGHT: Ø LBS
COMMENTS:

	WEIGHT	TIME	DATE	
IN:	80580 LBS	06:15	11/09/94	NET
UT:	34780 LBS	07:11	11/09/94	WEIGHT: 45800 LBS / 22.900 TONS

Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142860 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 199 WStar-Red/gry-Snrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: 51293 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	91700 LBS	06:16	11/09/94
OUT:	37740 LBS	07:12	11/09/94

NET WEIGHT: 53960 LBS / 26.980 TONS

Gail Hutchens
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142876 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 191 Int'l-Black-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	70520 LBS	06:56	11/09/94
OUT:	32700 LBS	07:27	11/09/94

NET WEIGHT: 37820 LBS / 18.910 TONS

Gail Hutchens

M. Buttens

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142878

*** COMPLETED WEIGHT TICKET ***

TRUCK ID: 00115 Intnatl-White-Sunris

ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #:

SEAL #:

CUSTOMER TICKET #: 51309

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	90440 LBS	07:24	11/09/94
OUT:	35760 LBS	07:59	11/09/94

NET WEIGHT: 54680 LBS / 27.340 TONS

Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142889

*** COMPLETED WEIGHT TICKET ***

TRUCK ID: 155 Volvo-Blue-Sunrise

ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #:

SEAL #:

CUSTOMER TICKET #: 62855

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	84440 LBS	07:37	11/09/94
OUT:	33060 LBS	08:00	11/09/94

NET WEIGHT: 51380 LBS / 25.690 TONS

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142898 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 0133 Peteblt-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	75200 LBS	07:50	11/09/94
OUT:	33220 LBS	08:10	11/09/94

NET WEIGHT: 41980 LBS / 20.990 TONS

Gail Hutchens
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 142919 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 182 Int'l-Red-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	90600 LBS	08:53	11/09/94
OUT:	35240 LBS	09:08	11/09/94

NET WEIGHT: 55360 LBS / 27.680 TONS

Gail Hutchens

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143023

*** COMPLETED WEIGHT TICKET ***

TRUCK ID: 199 WStar-Red/gry-Snrise

ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #:

SEAL #:

CUSTOMER TICKET #: 51294

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	99420 LBS	12:54	11/09/94
OUT:	37140 LBS	13:25	11/09/94

NET WEIGHT: 62280 LBS / 31.140 TONS

Gail Hutchens
Weighmaster - GAIL

Brett Nelwick
Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143024

*** COMPLETED WEIGHT TICKET ***

TRUCK ID: 191 Int'l-Black-Sunrise

ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #:

SEAL #:

CUSTOMER TICKET #: 63326

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	81580 LBS	12:55	11/09/94
OUT:	31540 LBS	13:26	11/09/94

NET WEIGHT: 50040 LBS / 25.020 TONS

Gail Hutchens

McBottoms

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143053 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 0133 Peteblt-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	81380 LBS	14:24	11/09/94
OUT:	32820 LBS	14:49	11/09/94

NET WEIGHT: 48560 LBS / 24.280 TONS

Weighmaster - JILL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143057 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 00115 Intnatl-White-Sunris ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	94200 LBS	14:38	11/09/94
OUT:	35280 LBS	15:07	11/09/94

NET WEIGHT: 58920 LBS / 29.460 TONS

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143058 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 155 Volvo-Blue-Sunrise

ACCOUNT: 11476 Chevron
P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #:

SEAL #:

CUSTOMER TICKET #:

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	83820 LBS	14:39	11/09/94
OUT:	32840 LBS	15:02	11/09/94

NET WEIGHT: 50980 LBS / 25.490 TONS

Weighmaster - JILL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143504 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 190 Autocar/Blu/Sunrise

ACCOUNT: 11476 Chevron
P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #:

SEAL #:

CUSTOMER TICKET #: 51303

CUSTOMER WEIGHT: 0 LBS

COMMENTS:

	WEIGHT	TIME	DATE
IN:	97020 LBS	08:55	11/11/94
OUT:	33300 LBS	09:59	11/11/94

NET WEIGHT: 63720 LBS / 31.860 TONS

Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143166 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 182 Int'l-Red-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	90020 LBS	06:19	11/10/94
OUT:	34740 LBS	06:32	11/10/94

NET WEIGHT: 55280 LBS / 27.640 TONS

Gail Hutchins
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143173 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 199 WStar-Red/gry-Snrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: 51295 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	100360 LBS	06:46	11/10/94
OUT:	37840 LBS	07:11	11/10/94

NET WEIGHT: 62520 LBS / 31.260 TONS

Gail Hutchins
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 3190 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 0133 Peteblt-Blue-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	80240 LBS	09:37	11/10/94
OUT:	35000 LBS	10:01	11/10/94

NET WEIGHT: 45240 LBS / 22.620 TONS

Gail Hutchins
Weighmaster - GAIL

Harold T
Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 3192 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 191 Int'l-Black-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: 63325 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	77900 LBS	10:28	11/10/94
OUT:	32200 LBS	10:46	11/10/94

NET WEIGHT: 45700 LBS / 22.850 TONS

Gail Hutchins
Weighmaster - GAIL

M. Butters
Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143197 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 166 Volvo-White-Sunrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: 51318 CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	88800 LBS	11:03	11/10/94
OUT:	32920 LBS	11:35	11/10/94

NET WEIGHT: 55880 LBS / 27.940 TONS

Gail Hutchins
Weighmaster - GAIL

Driver

REGIONAL DISPOSAL CO.

P.O. Box 338
Roosevelt, WA 99356
(509) 374-5641

TICKET NUMBER 143239 *** COMPLETED WEIGHT TICKET ***

TRUCK ID: 199 WStar-Red/gry-Snrise ACCOUNT: 11476 Chevron

P.O. Box 5004
San Ramon, CA 94583-0804

COMMODITY: 34 PCS
SOURCE: Camas, WA
JOB ID: 94-2049
CONTAINER #: SEAL #:

CUSTOMER TICKET #: CUSTOMER WEIGHT: 0 LBS
COMMENTS:

	WEIGHT	TIME	DATE
IN:	84560 LBS	14:54	11/10/94
OUT:	37000 LBS	15:23	11/10/94

NET WEIGHT: 47560 LBS / 23.780 TONS

Weighmaster - JILL

Driver

APPENDIX E
LABORATORY TESTING PROGRAM AND REPORT

APPENDIX E
LABORATORY TESTING PROGRAM AND REPORT

A laboratory testing program was performed to assess the chemical quality of soil samples. Analytical laboratory documentation of the test results and QA/QC results are presented at the end of the laboratory report.

Chemical Analyses on Soil

Chemical analyses on soil samples consisted of:

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020.
- Gasoline by Washington Ecology Method WTPH-G; and
- Diesel and oil by Washington Ecology Method WTPH-D Extended.

Laboratory Quality Assurance/Quality Control (QA/QC)

As part of their QA/QC program, the analytical laboratory conducts QA/QC checks on the samples. These include analysis of surrogate compounds, method blanks, laboratory duplicates, matrix spikes, and matrix spike duplicates. Acceptability or control limits for analyses are statistically derived by the laboratory in accordance with EPA guidelines. Please see the laboratory report for QA/QC results and discussions.

Surrogate Analyses. In a surrogate analysis, a known amount of a compound similar to the constituent of interest is added to a sample and measured. The surrogate analysis assesses the accuracy of a chemical measurement by comparing the measured value to the actual spiked value. All surrogates were within control limits.

Method Blanks. A method, or laboratory blank, is a sample prepared in the laboratory along with the actual samples and analyzed for the same parameters at the same time. It is used to assess if detected contaminants may have been the result of contamination of the samples in the laboratory. Analytes were not detected in any of the method blanks.

Laboratory Duplicate. A laboratory duplicate is a second laboratory sample taken from a submitted sample and prepared along with the original. It is analyzed and compared to the first to assess the precision of the analytical method. This comparison is normally expressed by the relative percent difference (RPD) between the original and duplicate samples. The RPD results were within control limits.

Matrix Spike Analyses. Matrix spike analyses are performed on samples submitted to the laboratory which are of the same matrix as the actual sample. It is spiked with known levels of the constituents of interest. These analyses are used to assess the potential for matrix interference with recovery or detection of the constituents of interest and the accuracy of the determination. The spiked sample results are compared to the expected result (i.e., sample concentration plus spike amount) and reported as percent recovery. All matrix spike analyses were within control limits.

Duplicate Matrix Spikes. In addition, a second matrix spike sample (a.k.a., the matrix spike duplicate) is prepared as above and analyzed. This is compared to the initial matrix spike to assess the precision of the analytical method (i.e., RPD). All RPD results were within control limits.

Analytical**Technologies,**Inc. 17400 S.W. Upper Boones Ferry Road, Suite 270 Durham, OR. 97224
(503) 684-0447 (503) 620-0393 (FAX)

HART CROWSER INC.

NOV 28 1994

Portland Office

ATI I.D. 411564

November 17, 1994

Rick Ernst
Hart Crowser
5 SW Centerpointe Dr.
Suite 240
Lake Oswego, OR 97035

Project Name/Number: Chevron 100-1840 / J-5407-01

Attention: Rick Ernst

On November 9, 1994, Analytical Technologies, Inc. received nine soil samples for analysis for the above listed project. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

All analyses met our laboratory's quality assurance criteria.

If you have any questions or comments, please do not hesitate to contact us at (503)684-0447.

Fred Voosen
Project Manager

Alan J. Kleinschmidt
Laboratory Manager

AJK:alm
Enclosure

Analytical Technologies, Inc.

SAMPLE CROSS REFERENCE SHEET

CLIENT:	Hart Crowser	**ATI I.D.:**	411564
PROJECT #:	J-5407-01		
PROJECT NAME:	Chevron 100-1840	**MATRIX:**	SOIL

ATI #	CLIENT DESCRIPTION	DATE SAMPLED
411564-1	ES-1	11/07/94
411564-2	ES-2	11/07/94
411564-3	ES-3	11/07/94
411564-4	ES-4	11/07/94
411564-5	ES-5	11/08/94
411564-6	ES-6	11/08/94
411564-7	ES-7	11/08/94
411564-8	ES-8	11/08/94
411564-9	ES-9	11/08/94

----------TOTALS----------

MATRIX	# SAMPLES
SOIL	9

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ANALYTICAL SCHEDULE

CLIENT:	Hart Crowser	ATI I.D.:	411564
PROJECT #:	J-5407-01		
PROJECT NAME:	Chevron 100-1840		

ANALYSIS	TECHNIQUE	REFERENCE	LAB
BETX	GC/PID	EPA 8020M	PLD
Petroleum Hydrocarbon	GC/FID	WA TPH-G	PLD
Petroleum Hydrocarbon	GC/FID	WA TPH-D Ext	PLD

PLD = ATI - Portland
R = ATI - Renton
SD = ATI - San Diego
PHX = ATI - Phoenix
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY SUMMARY RESULTS

TEST:	BETX (EPA 8020M)	ATI I.D.:	411564
CLIENT:	Hart Crowser	DATE RECEIVED:	11/09/94
PROJECT #:	J-5407-01	DATE EXTRACTED:	11/11/94
PROJECT NAME:	Chevron 100-1840	UNITS:	mg/Kg
SAMPLE MATRIX:	SOIL		

RESULTS CORRECTED FOR MOISTURE CONTENT

ATI I.D.	CLIENT I.D.	DATE SAMPLED	DATE ANALYZED	DF	MRL	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	TFT (50%-138%)
411564-0	Method Blank	N/A	11/11/94	1	0.025	ND	ND	ND	ND	107%
411564-1	ES-1	11/07/94	11/11/94	1	0.031	ND	ND	ND	ND	100%
411564-2	ES-2	11/07/94	11/11/94	1	0.030	ND	ND	ND	ND	97%
411564-3	ES-3	11/07/94	11/14/94	1	0.034	ND	ND	0.61	1.6	93%
411564-4	ES-4	11/07/94	11/14/94	1	0.029	ND	ND	1.8	8.3	101%
411564-5	ES-5	11/08/94	11/14/94	1	0.036	ND	ND	5.9	47 D	98%
411564-6	ES-6	11/08/94	11/14/94	1	0.030	ND	ND	ND	0.035	100%
411564-7	ES-7	11/08/94	11/14/94	1	0.030	ND	ND	1.9	7.9	98%
411564-8	ES-8	11/08/94	11/11/94	1	0.029	ND	ND	ND	ND	102%
411564-9	ES-9	11/08/94	11/11/94	1	0.029	ND	ND	ND	ND	106%

D = Value from a 1:10 dilution analyzed on 11-11-94.

Analyst: 11-16-94

Reviewer: CS 11-16-94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY SPIKE RESULTS

		ATI ID:	411564
METHOD:	BETX (EPA 8020M)	QC SAMPLE:	411564-1
CLIENT:	Hart Crowser	DATE EXTRACTED:	11/11/94
PROJECT #:	J-5407-01	DATE ANALYZED:	11/15/94
PROJECT NAME:	Chevron 100-1840	DILUTION FACTOR:	1
SAMPLE MATRIX:	SOIL	UNITS:	mg/kg

RESULTS CORRECTED FOR MOISTURE CONTENT

PARAMETER		SAMPLE RESULT	SPIKE CONC.	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
BENZENE	<	0.031	1.23	1.15	93	1.17	95	2
TOLUENE	<	0.031	1.23	1.18	96	1.20	98	2
ETHYLBENZENE	<	0.031	1.23	1.15	93	1.18	96	3
TOTAL XYLENES	<	0.031	3.70	3.45	93	3.50	95	1
SURROGATE:								
TRIFLUOROTOLUENE (50% - 138%)					91%		90%	

CONTROL LIMITS

	% REC	RPD
BENZENE	55-121	20
TOLUENE	54-125	20
ETHYLBENZENE	55-127	20
TOTAL XYLENES	50-140	20

Analyst: 11-16-94

Reviewer: CS 11-16-94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

TEST:	TPH-GASOLINE (Washington)	ATI I.D.:	411564
CLIENT:	Hart Crowser	DATE RECEIVED:	11/09/94
PROJECT #:	J-5407-01	DATE EXTRACTED:	11/11/94
PROJECT NAME:	Chevron 100-1840	UNITS:	mg/Kg
SAMPLE MATRIX:	SOIL		

RESULTS CORRECTED FOR MOISTURE CONTENT

ATI ID	CLIENT ID	DATE SAMPLED	DATE ANALYZED	DF	MRL	GASOLINE (C7 - C12)	TFT (56%-143%)
411564-0	Method Blank	N/A	11/11/94	1	5.0	ND	121%
411564-1	ES-1	11/07/94	11/11/94	1	6.2	ND	108%
411564-2	ES-2	11/07/94	11/11/94	1	6.0	ND	103%
411564-3	ES-3	11/07/94	11/11/94	5	34	400	91%
411564-4	ES-4	11/07/94	11/11/94	5	29	510	92%
411564-5	ES-5	11/08/94	11/11/94	10	69	1800	82%
411564-6	ES-6	11/08/94	11/14/94	1	6.0	10	100%
411564-7	ES-7	11/08/94	11/14/94	10	60	1700	91%
411564-8	ES-8	11/08/94	11/14/94	1	5.9	ND	104%
411564-9	ES-9	11/08/94	11/11/94	1	5.7	ND	111%

Analyst: 11-16-94

Reviewer: CS 11-16-94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY DUPLICATE RESULTS

		ATI ACCESSION:	411564
TEST:	TPH-GASOLINE (Washington)	QC SAMPLE:	411564-1
CLIENT:	Hart Crowser	DATE EXTRACTED:	11/11/94
PROJECT #:	J-5407-01	DATE ANALYZED:	11/11/94
PROJECT NAME:	Chevron 100-1840	DILUTION FACTOR:	1
SAMPLE MATRIX:	SOIL	UNITS:	mg/Kg

RESULTS CORRECTED FOR MOISTURE CONTENT

PARAMETER	MRL	SAMPLE RESULT	SAMPLE DUP RESULT	RPD
GASOLINE	6.2	ND	ND	N/A
SURROGATE:				
TRIFLUOROTOLUENE (56% - 143%)		108%	107%	

	CONTROL LIMITS
	RPD
Gasoline	20

Analyst: 11-15-94

Reviewer: 11/15/94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY DUPLICATE RESULTS

		ATI ACCESSION:	411564
TEST:	TPH-GASOLINE (Washington)	QC SAMPLE:	411564-2
CLIENT:	Hart Crowser	DATE EXTRACTED:	11/11/94
PROJECT #:	J-5407-01	DATE ANALYZED:	11/11/94
PROJECT NAME:	Chevron 100-1840	DILUTION FACTOR:	1
SAMPLE MATRIX:	SOIL	UNITS:	mg/Kg

RESULTS CORRECTED FOR MOISTURE CONTENT

PARAMETER	MRL	SAMPLE RESULT	SAMPLE DUP RESULT	RPD
GASOLINE	6.0	ND	ND	N/A
SURROGATE:				
TRIFLUOROTOLUENE (56% - 143%)		103%	104%	

CONTROL LIMITS

	RPD
Gasoline	20

Analyst: [signature] 11-15-94

Reviewer: LD 11/15/94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY SPIKE RESULTS

		ATI ACCESSION:	411564
TEST:	TPH-GASOLINE (WASHINGTON)	QC SAMPLE:	411564-8
CLIENT:	Hart Crowser	DATE EXTRACTED:	11/11/94
PROJECT #:	J-5407-01	DATE ANALYZED:	11/12/94
PROJECT NAME:	Chevron 100-1840	DILUTION FACTOR:	1
SAMPLE MATRIX:	SOIL	UNITS:	mg/Kg

RESULTS CORRECTED FOR MOISTURE CONTENT

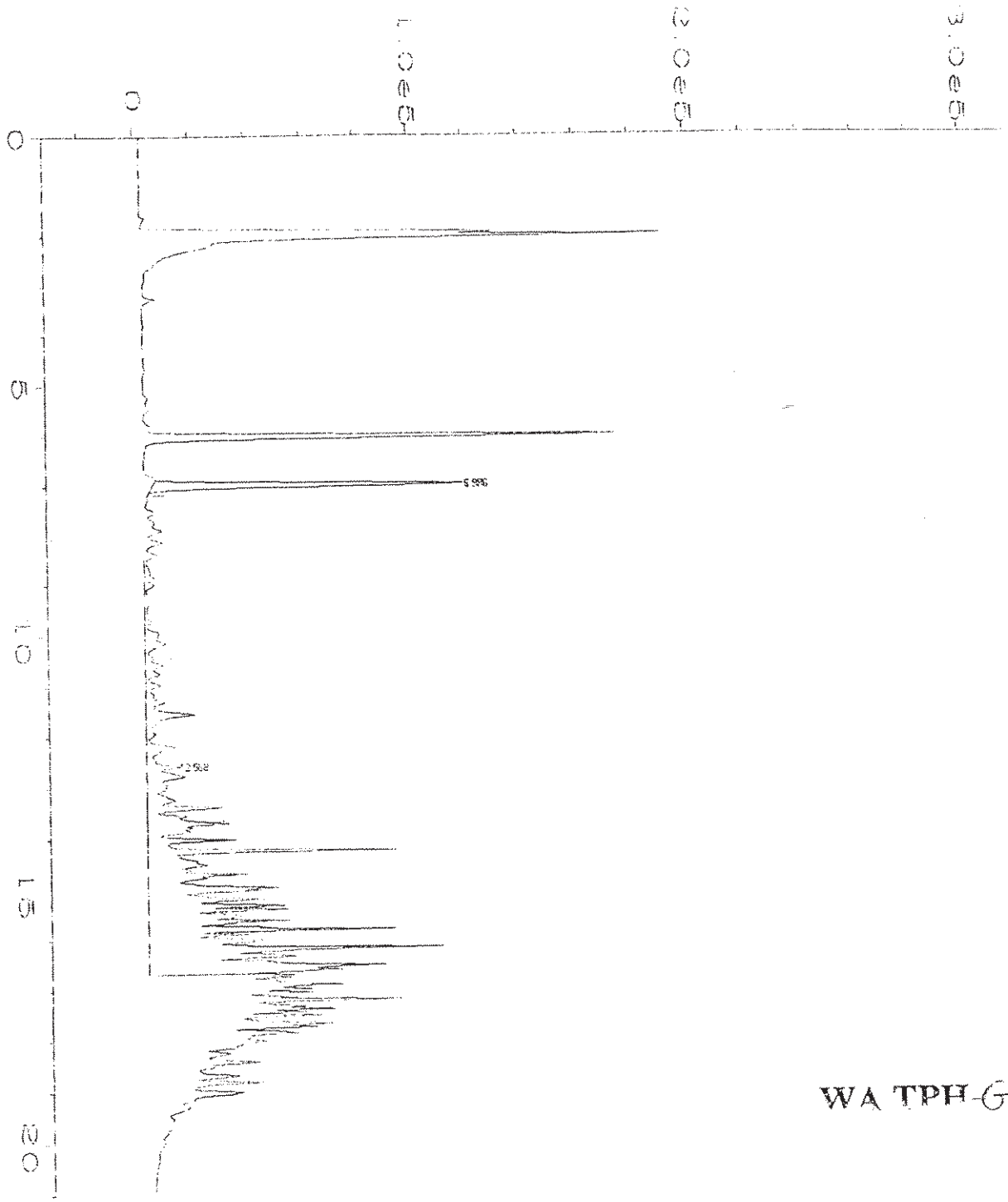
PARAMETER		SAMPLE RESULT	SPIKE CONC.	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
GASOLINE	<	5.9	118	96	81	97	82	1
SURROGATE: TRIFLUOROTOLUENE (56% - 143%)					82%		87%	

CONTROL LIMITS

	% REC	RPD
Gasoline	50 - 128	20

Analyst: 11-15-94

Reviewer: LO 11/15/94



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Instrument	: WATSON	Vial Number	: 9
Sample Name	: 411564-3 1:5	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 11 Nov 94 06:00 PM	Instrument Method	: TPHG.MT
Report Created on	: 14 Nov 94 12:05 PM	Analysis Method	: WTPHG.M
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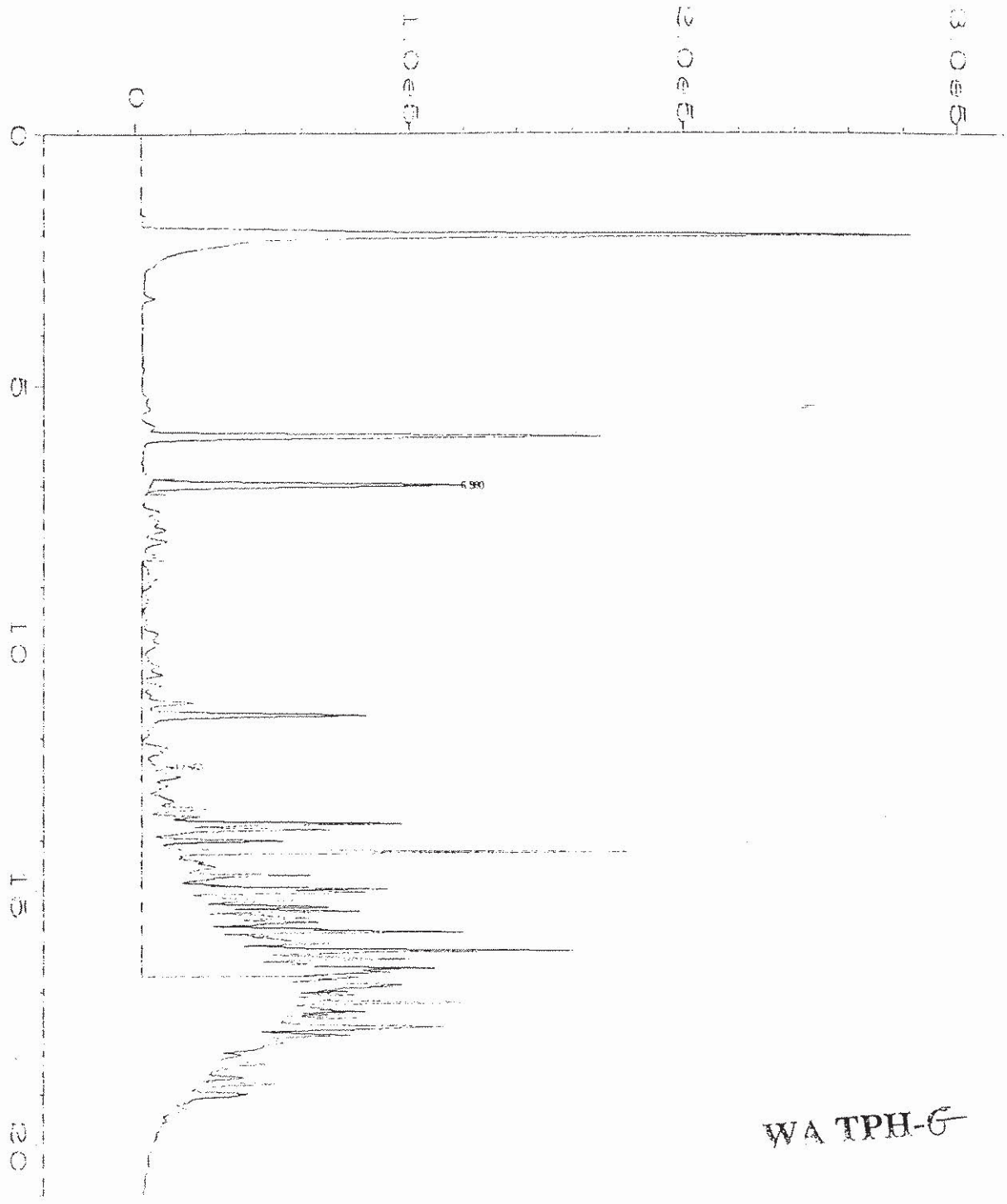
Multiplier	: 1	ISTD Amount	:



WA TPH-G

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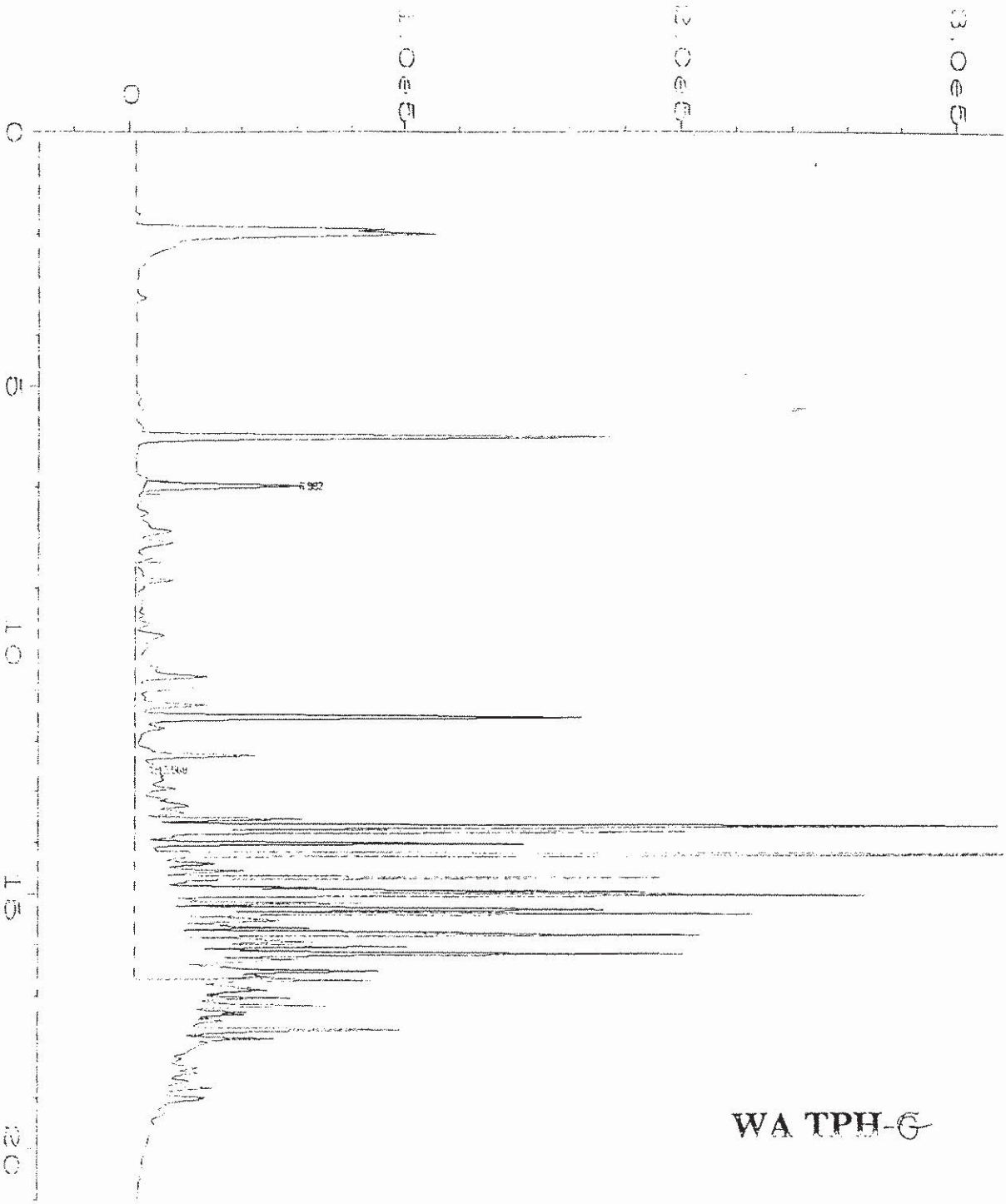
Sample Name	: 411564-4 1:5	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 11 Nov 94 06:29 PM	Instrument Method	: TPHG.MTH
Report Created on	: 14 Nov 94 12:08 PM	Analysis Method	: WTPHG.MTH
Last Recalib on	: 11 NOV 94 12:26 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WA TPH-G

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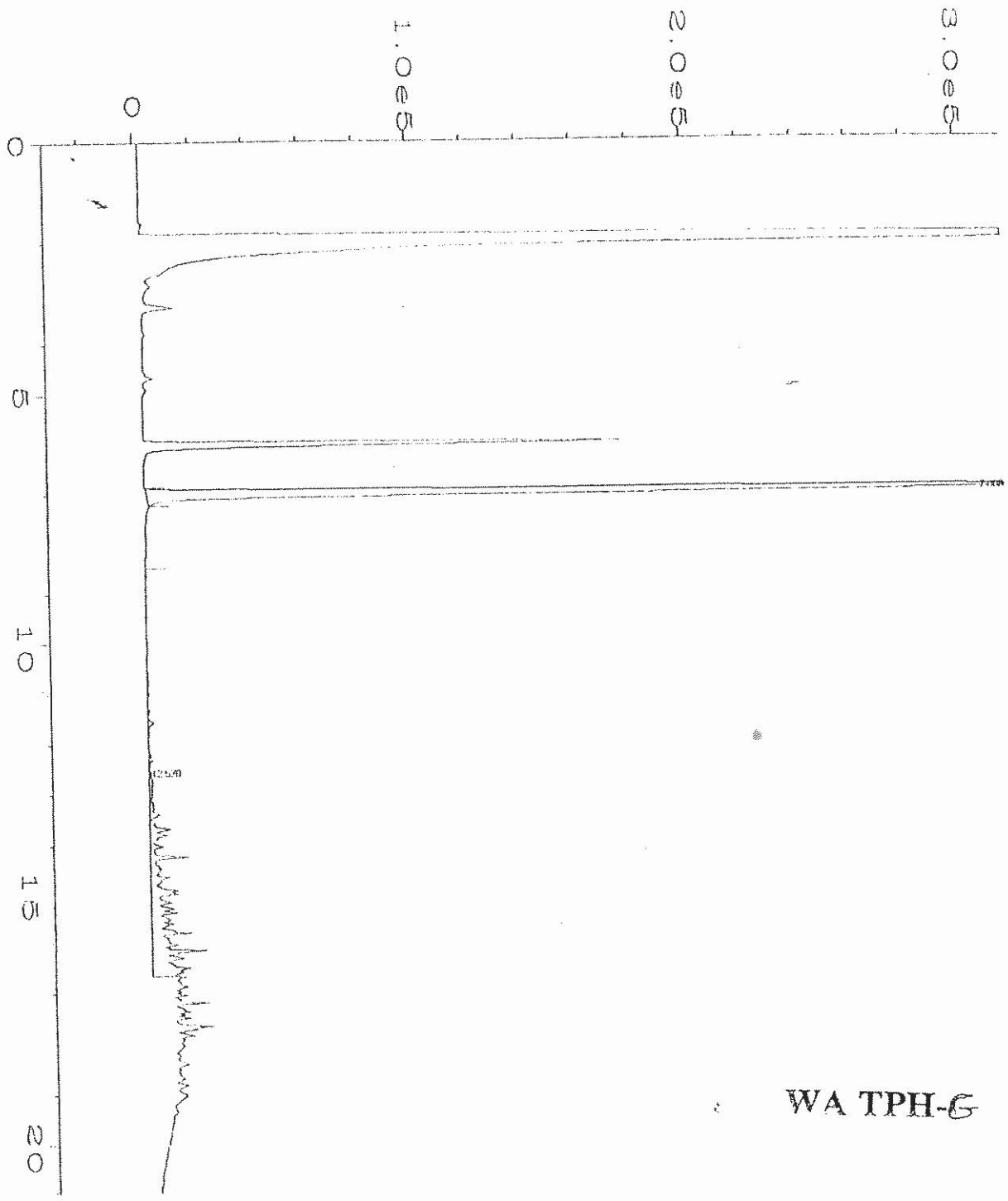
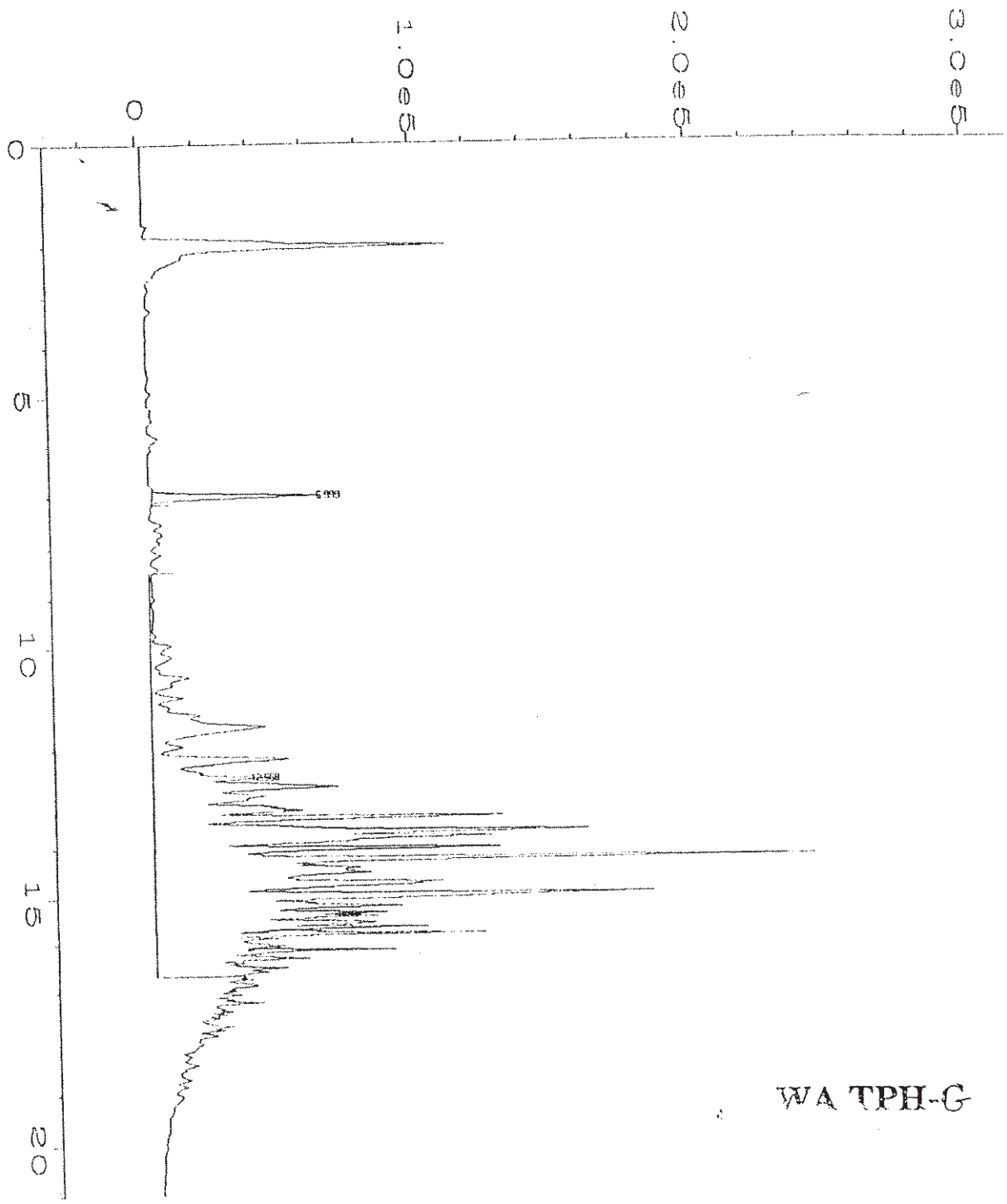
Instrument	: WATSON	Vial Number	: 11
Sample Name	: 411564-5 1:10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 11 Nov 94 06:58 PM	Instrument Method	: TPHG.MTH
Report Created on:	14 Nov 94 12:10 PM	Analysis Method	: WTPHG.MTH
Last Recalib on	: 11 NOV 94 12:26 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WA TPH-G

Data File Name	: F:\DATA\FUELS\WATSON\D\941114\006R0101.D		
Operator	: !!!FUELS!!!	Page Number	: 1
Instrument	: WATSON	Vial Number	: 6
Sample Name	: 411564-6	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 14 Nov 94 05:10 PM	Instrument Method	: TPHG.MTH
Report Created on	: 15 Nov 94 10:42 AM	Analysis Method	: WTPHG.MT
Last Recalib on	: 11 NOV 94 12:26 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WA TPH-G

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Sample Name	: 411564-7 1:10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 14 Nov 94 04:42 PM	Instrument Method	: TPHG.MTH
Report Created on	: 15 Nov 94 10:44 AM	Analysis Method	: WTPHG.MT
Last Recalib on	: 11 NOV 94 12:26 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

TEST:	TPH-D Extended (Washington)	ATI I.D.:	411564
CLIENT:	Hart Crowser	DATE RECEIVED:	11/09/94
PROJECT #:	J-5407-01	DATE EXTRACTED:	11/14/94
PROJECT NAME:	Chevron 100-1840	UNITS:	mg/Kg
SAMPLE MATRIX:	SOIL		

RESULTS CORRECTED FOR MOISTURE CONTENT

ATI ID	CLIENT ID	DATE SAMPLED	DATE ANALYZED	DF	MRL	DIESEL C12 - C24	MRL	OIL C24 - C36	O-TERPHENYL (59% - 144%)
411564-0	Method Blank	N/A	11/14/94	1	20	ND	100	ND	110%
411564-1	ES-1	11/07/94	11/16/94	1	25	ND	120	ND	98%
411564-2	ES-2	11/07/94	11/14/94	1	24	ND	120	ND	103%
411564-3	ES-3	11/07/94	11/16/94	1	270 D	3600 D	140	ND	120%
411564-4	ES-4	11/07/94	11/15/94	1	120 D*	2600 D*	120	ND	111%
411564-5	ES-5	11/08/94	11/15/94	1	110 D**	2000 D**	140	ND	107%
411564-6	ES-6	11/08/94	11/15/94	1	48 D^	1000 D^	120	200	111%
411564-7	ES-7	11/08/94	11/15/94	1	120 D*	2900 D*	120	ND	108%
411564-8	ES-8	11/08/94	11/16/94	1	24	28	120	ND	109%
411564-9	ES-9	11/08/94	11/15/94	1	23	74	110	ND	94%

D = Value from a 1:10 dilution analyzed on 11/16/94.
D* = Value from a 1:5 dilution analyzed on 11/16/94.
D** = Value from a 1:4 dilution analyzed on 11/16/94.
D^ = Value from a 1:2 dilution analyzed on 11/16/94.

Analyst: BS 11/17/94
Reviewer: CS 11-17-94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY DUPLICATE RESULTS

		ATI ACCESSION:	411564
TEST:	TPH-D Extended (Washington)	QC SAMPLE:	411564-9
CLIENT:	Hart Crowser	DATE EXTRACTED:	11/14/94
PROJECT #:	J-5407-01	DATE ANALYZED:	11/15/94
PROJECT NAME:	Chevron 100-1840	DILUTION FACTOR:	1
SAMPLE MATRIX:	SOIL	UNITS:	mg/Kg

RESULTS CORRECTED FOR MOISTURE CONTENT

PARAMETER	MRL	SAMPLE RESULT	SAMPLE DUP RESULT	RPD
DIESEL	23	74	78	5
MOTOR OIL	110	ND	ND	N/A
SURROGATE:				
O-TERPHENYL (59% - 144%)		94%	96%	

CONTROL LIMITS

	RPD
DIESEL	23

Analyst: BJ 11/15/94

Reviewer: LO 11/15/94

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY SPIKE RESULTS

		ATI ACCESSION:	411564
TEST:	TPH-D Extended (Washington)	QC SAMPLE:	411582-4
CLIENT:	Hart Crowser	DATE EXTRACTED:	11/14/94
PROJECT #:	J-5407-01	DATE ANALYZED:	11/14/94
PROJECT NAME:	Chevron 100-1840	DILUTION FACTOR:	1
SAMPLE MATRIX:	SOIL	UNITS:	mg/Kg

RESULTS CORRECTED FOR MOISTURE CONTENT

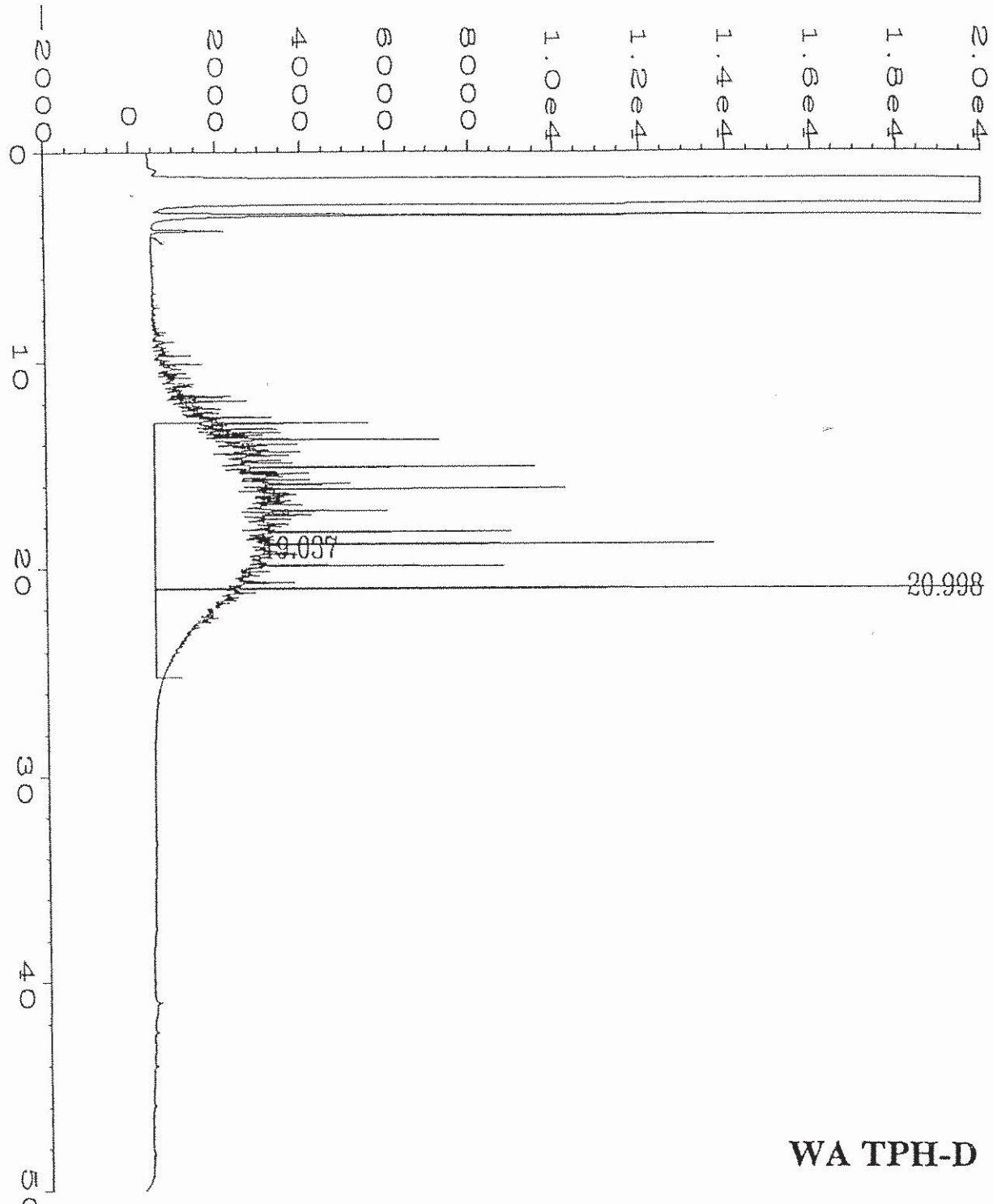
PARAMETER	SAMPLE RESULT	SPIKE CONC.	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
DIESEL	< 22	275	308	112	313	114	2
SURROGATE:							
O-TERPHENYL (51% - 140%)				105%		105%	

CONTROL LIMITS

	% REC	RPD
DIESEL	65 - 142	20

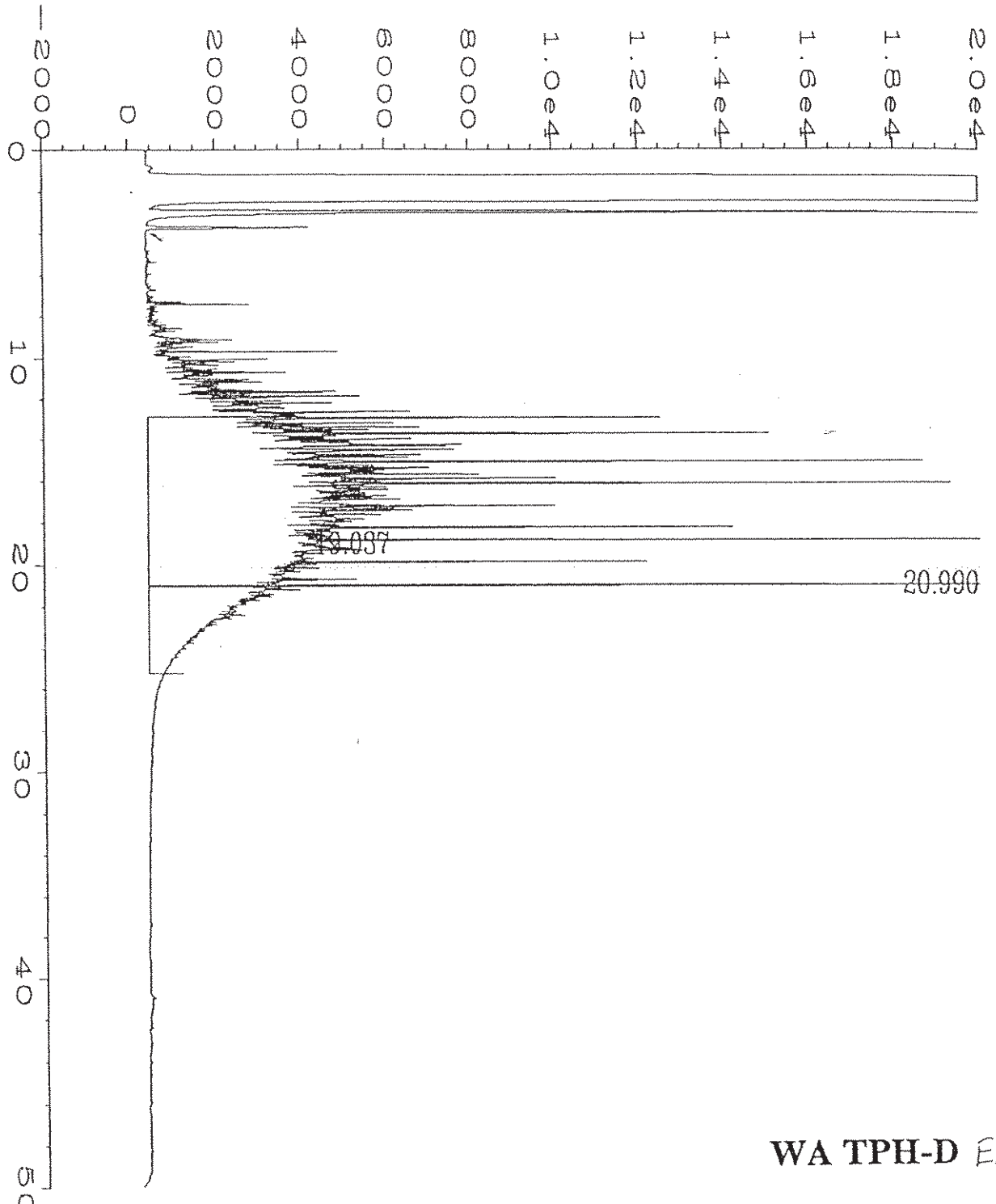
Analyst: [signature] 11/15/94

Reviewer: [signature] 11/15/94



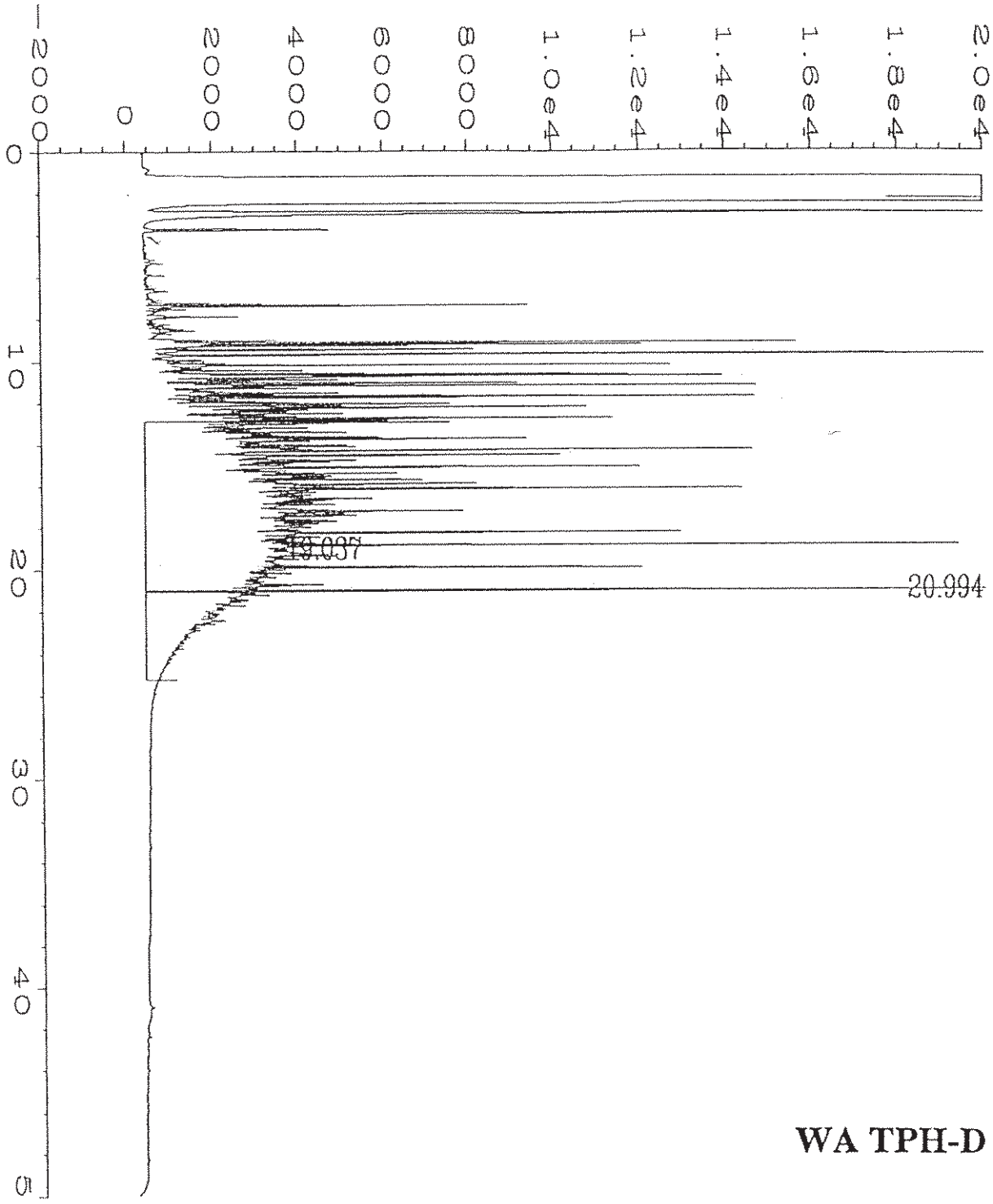
WA TPH-D Ext.

Data File Name	: F:\DATA\FUELS\DEEMTER\D\941116\053R0101.D		
Operator	: FUELS	Page Number	: 1
Instrument	: DEEMTER	Vial Number	: 53
Sample Name	: 411564-3 1:10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 16 Nov 94 04:47 PM	Instrument Method	: OHCID.MTH
Report Created on	: 17 Nov 94 09:30 AM	Analysis Method	: WR-DXOIL.MT
Last Recalib on	: 10 NOV 94 09:56 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



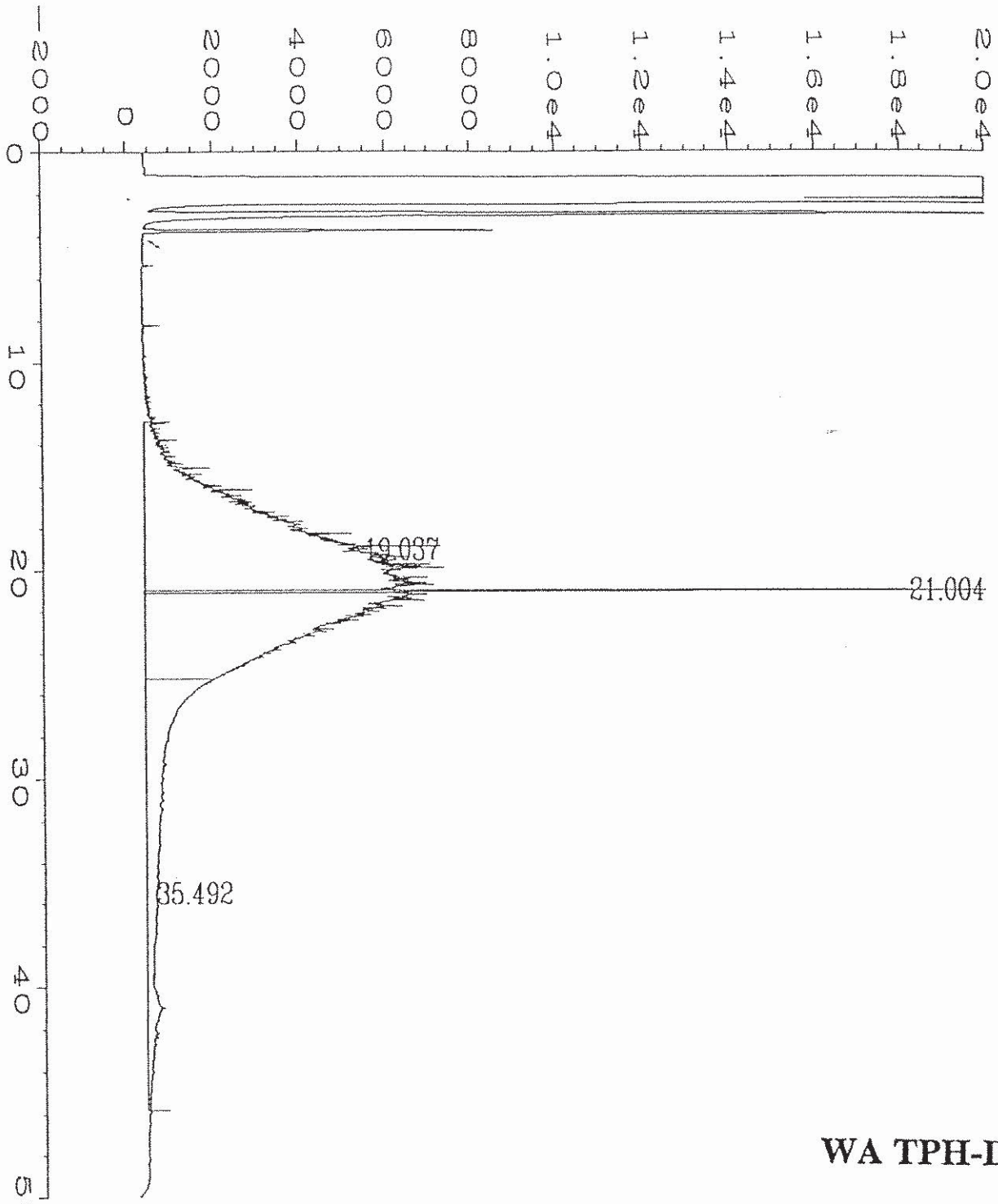
WA TPH-D Ext.

Data File Name	: F:\DATA\FUELS\DEEMTER\D\941116\054R0101.D		
Operator	: FUELS	Page Number	: 1
Instrument	: DEEMTER	Vial Number	: 54
Sample Name	: 411564-4 1:5	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 16 Nov 94 05:40 PM	Instrument Method	: OHCID.MTH
Report Created on	: 17 Nov 94 09:31 AM	Analysis Method	: WR-DXOIL.MTH
Last Recalib on	: 10 NOV 94 09:56 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



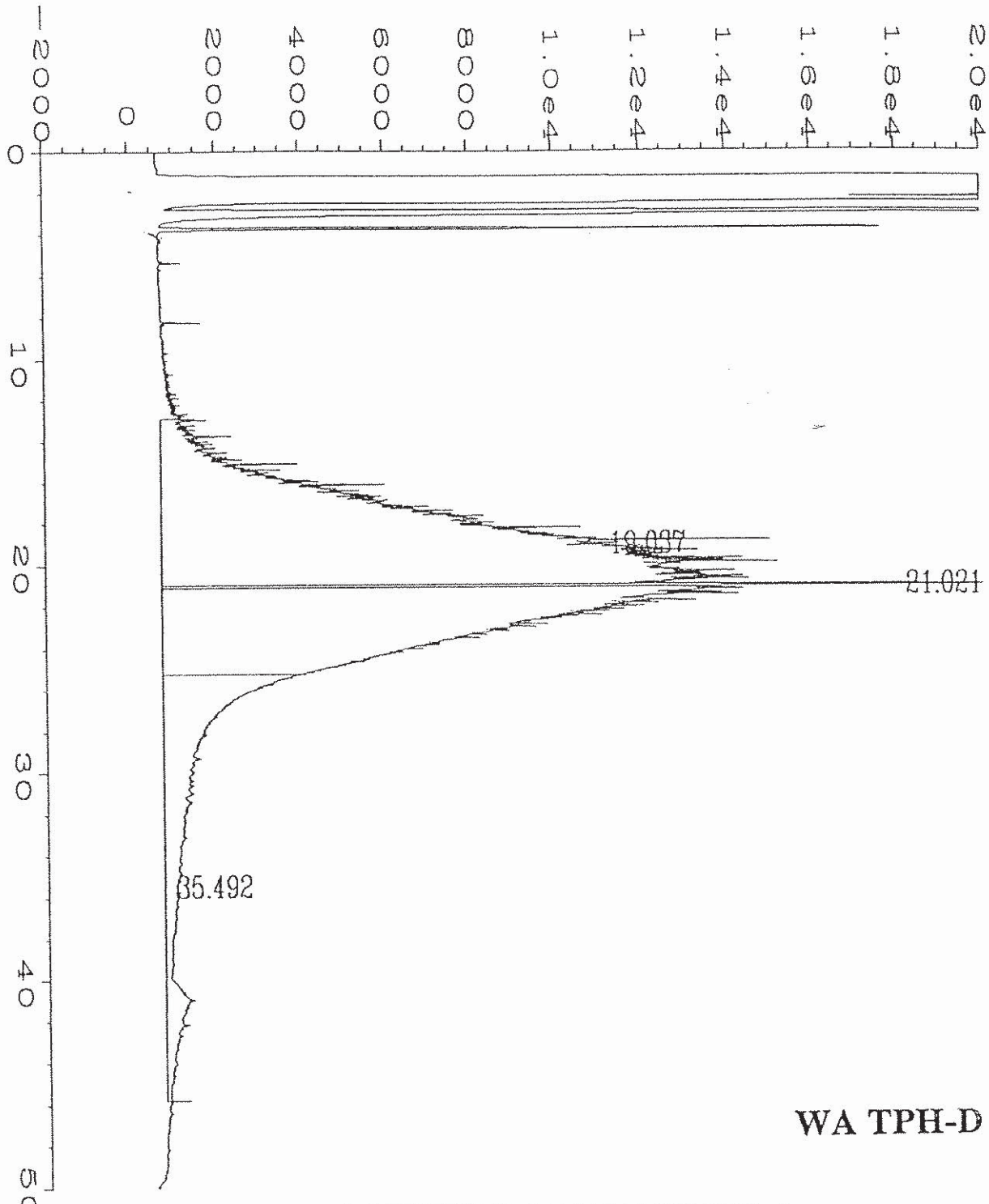
WA TPH-D Ext.

Data File Name	: F:\DATA\FUELS\DEEMTER\D\941116\055R0101.D		
Operator	: FUELS	Page Number	: 1
Instrument	: DEEMTER	Vial Number	: 55
Sample Name	: 411564-5 1:4	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 16 Nov 94 06:42 PM	Instrument Method	: OHCID.MTH
Report Created on	: 17 Nov 94 09:33 AM	Analysis Method	: WR-DXOIL.MTH
Last Recalib on	: 10 NOV 94 09:56 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WA TPH-D Ext.

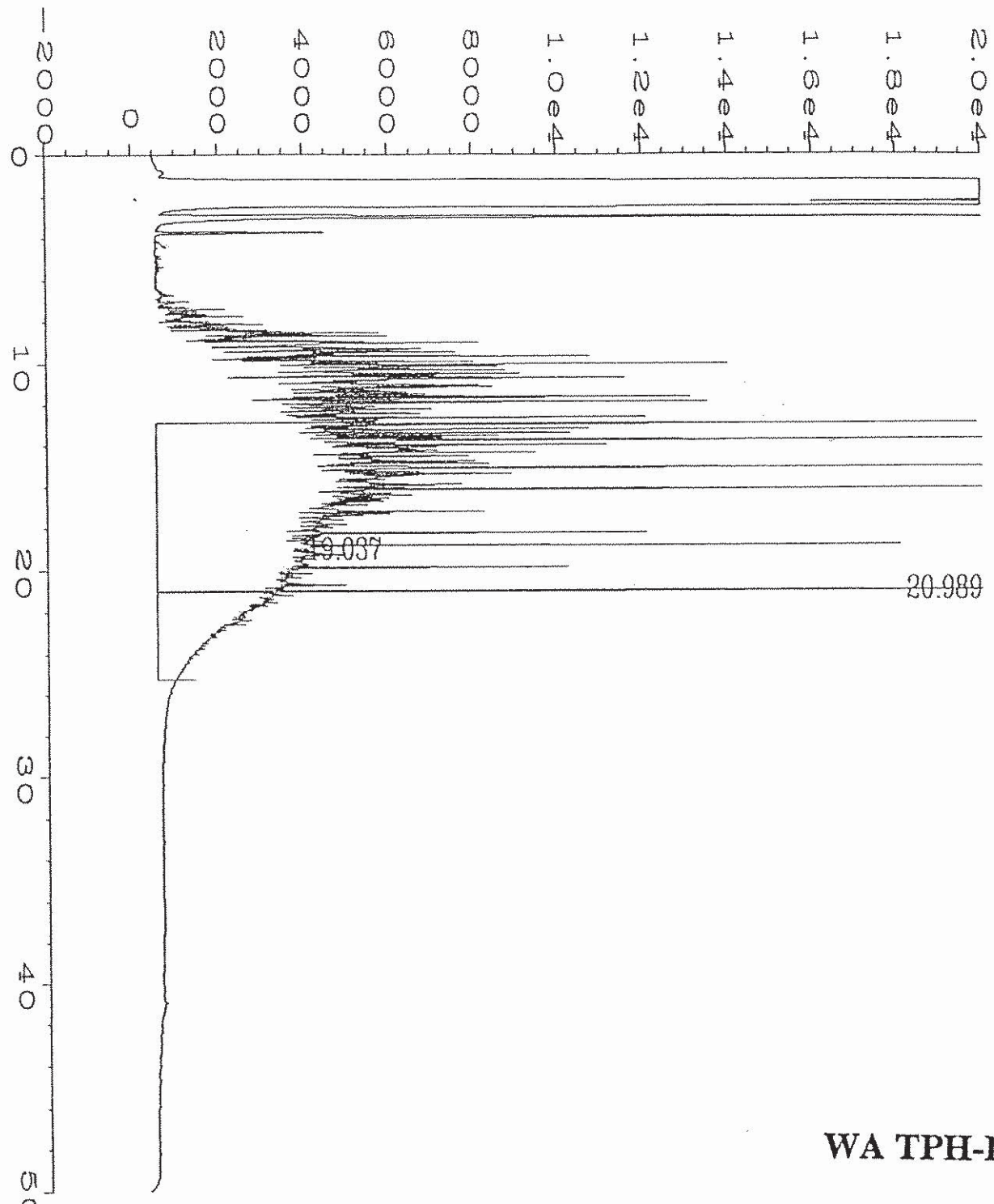
Data File Name	: F:\DATA\FUELS\DEEMTER\D\941116\056R0101.D		
Operator	: FUELS	Page Number	: 1
Instrument	: DEEMTER	Vial Number	: 56
Sample Name	: 411564-6 1:2	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 16 Nov 94 07:49 PM	Instrument Method	: OHCID.MTH
Report Created on:	17 Nov 94 09:34 AM	Analysis Method	: WR-DXOIL.MTH
Last Recalib on	: 10 NOV 94 09:56 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WA TPH-D Ext.

Data File Name : F:\DATA\FUELS\DEEMTER\D\941115\057R0101.D
Operator : FUELS
Instrument : DEEMTER
Sample Name : 411564-6
Run Time Bar Code:
Acquired on : 15 Nov 94 10:10 PM
Report Created on: 16 Nov 94 10:20 AM
Last Recalib on : 10 NOV 94 09:56 AM
Multiplier : 1

Page Number : 1
Vial Number : 57
Injection Number : 1
Sequence Line : 1
Instrument Method: OHCID.MTH
Analysis Method : WR-DXOIL.MT
Sample Amount : 0
ISTD Amount :



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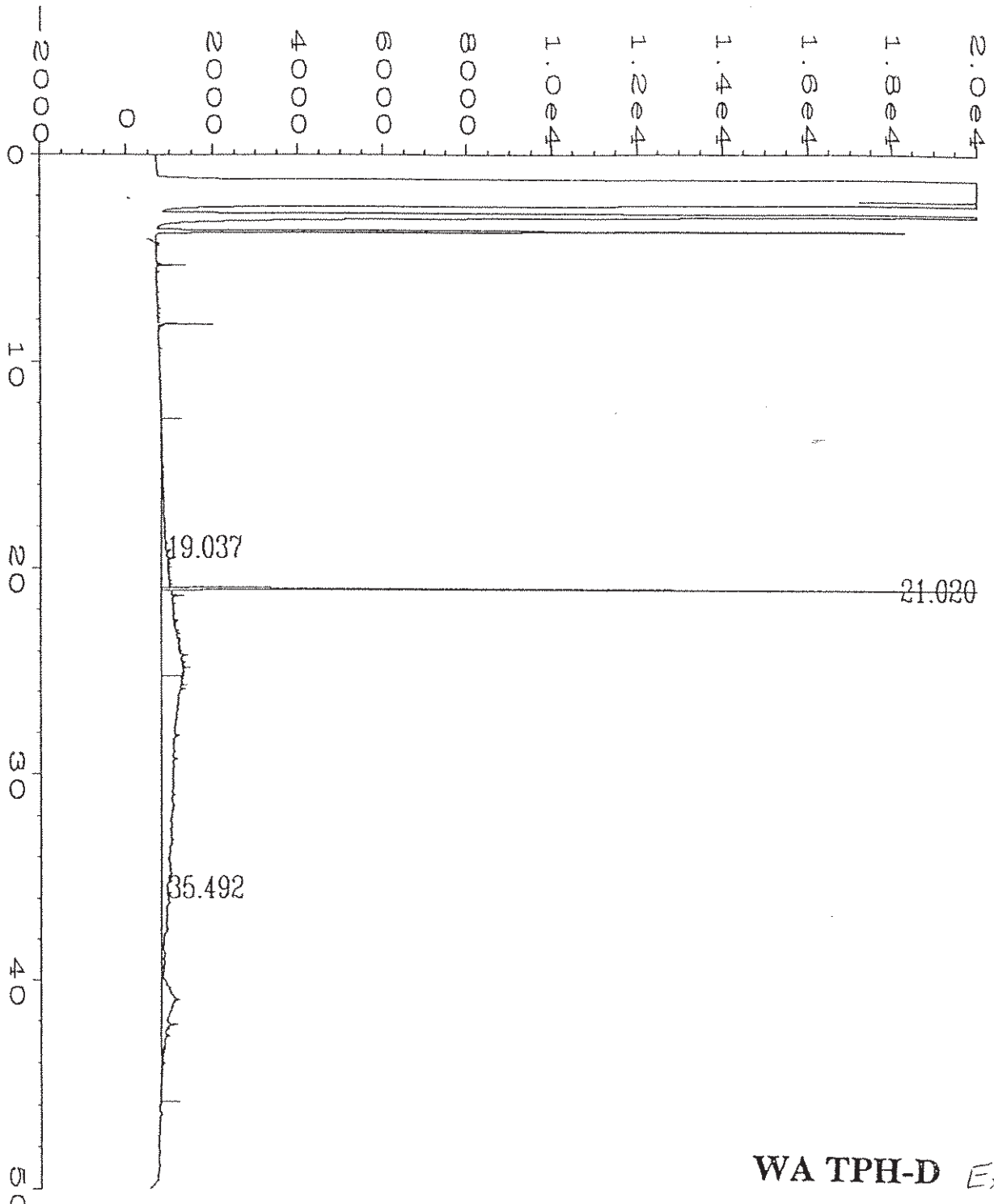
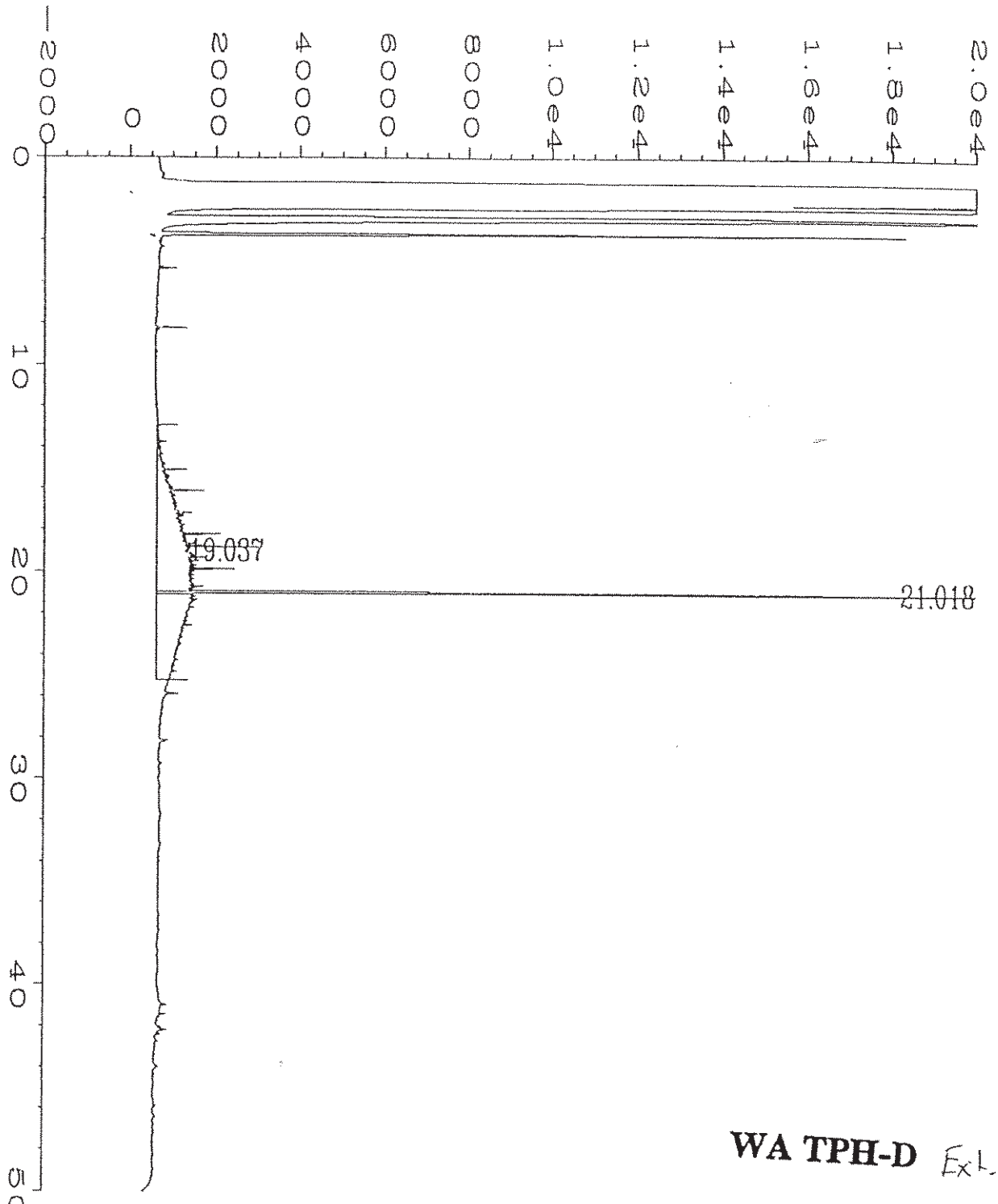
Data File Name	: F:\DATA\FUELS\DEEMTER\D\941116\057R0101.D		
Operator	: FUELS	Page Number	: 1
Instrument	: DEEMTER	Vial Number	: 57
Sample Name	: 411564-7 1:5	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 16 Nov 94 08:57 PM	Instrument Method	: OHCID.MTH
Report Created on	: 17 Nov 94 10:00 AM	Analysis Method	: WR-DXOIL.MTH
Last Recalib on	: 10 NOV 94 09:56 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WA TPH-D Ext.

Data File Name	: F:\DATA\FUELS\DEEMTER\D\941115\059R0101.D		
Operator	: FUELS	Page Number	: 1
Instrument	: DEEMTER	Vial Number	: 59
Sample Name	: 411564-8	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 1
Acquired on	: 16 Nov 94 00:22 AM	Instrument Method	: OHCID.MTH
Report Created on	: 16 Nov 94 10:23 AM	Analysis Method	: WR-DXOIL.MI
Last Recalib on	: 10 NOV 94 09:56 AM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:



WA TPH-D Ex L

Data File Name : F:\DATA\FUELS\DEEMTER\D\941114\064R0101.D
Operator : FUELS
Instrument : DEEMTER
Sample Name : 411564-9
Run Time Bar Code:
Acquired on : 15 Nov 94 06:07 AM
Report Created on: 15 Nov 94 11:31 AM
Last Recalib on : 10 NOV 94 09:56 AM
Multiplier : 1

Page Number : 1
Vial Number : 64
Injection Number : 1
Sequence Line : 1
Instrument Method: OHCID.MTH
Analysis Method : WR-DXOIL.MTH
Sample Amount : 0
ISTD Amount :

YES (06) -05

Fax copy of Lab Report and COC to Chevron Contact: ☐ NO

Chain-of-Custody-Record

Chevron U.S.A., Inc. under contract with ATI Portland FAX: (503) 620-0393 Renton FAX: (206) 363-1742	
Chevron Facility Number	100-1840
Facility Address	SE 6th Avenue, Camas, WA
Consultant Project Number	J-5407-01
Consultant Name	Hart Crowser, Inc.
Address	5 Centerpointe Dr, Ste 240, Lk. Osw, OR
Project Contact (Name)	Rich Ernst 9285
(Phone)	(503) 620-7284 (FAX) (503) 620-6918
Chevron Contact (Name)	Stephen Pratt
(Phone)	(510) 842-9181
Laboratory Name	Analytical Technologies, Inc.
Laboratory Release Number	838930
Samples Collected by (Name)	Richard Ernst
Collection Date	11/7-11/8/94
Signature	Richard Ernst

Sample Number	Lab Sample Number	Number of Container	Matrix (S - Soil, W - Water, A - Air, C - Charcoal)	Type (G - Grab, C - Composite, D - Discrete)	Time	Sample Preservation	Iced (Yes or No)	TPH-G/BETX (8015 MOD./8020)	BETX (8020)	TPH-HCID State:	TPH-G State: WA	TPH-D State: WA Extended	TPH Special Instructions	TPH-IR (418.1)	Purgable Halocarbons (8010)	Purgeable Aromatics (8020)	PCBs Only (8080M)	PCB / Pesticides (8080)	HPLC PAHs (8310)	Total and/or Dissolved LEAD State:	Purgeable Organics (8240) GC/MS	Extractable Organics (8270) GC/MS	Remarks
ES-1	1	1	S	D	11/7		Y		X		X	X											41564
ES-2	2	1			11/7				X		X	X											Run WA TPH-G/BTEX + WA TPH-D Extended. Report both diesel oil #'s separately.
ES-3	3	1			11/7				X		X	X											
ES-4	4	1			11/7				X		X	X											
ES-5	5	1			11/8				X		X	X											
ES-6	6	1			11/8				X		X	X											
ES-7	7	1			11/8				X		X	X											
ES-8	8	1			11/8				X		X	X											
ES-9	9	1			11/8				X		X	X											

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Orgainzation	Date/Time
Brett Broderson	Hart Crowser	11/9/94 1245		ATI	11/9/94 1245
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Orgainzation	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory By (Signature)		Date/Time

Turnaround Time (Circle Choice)

24 Hrs.
48 Hrs.
5 Days
10 Days
~~As Contracted~~